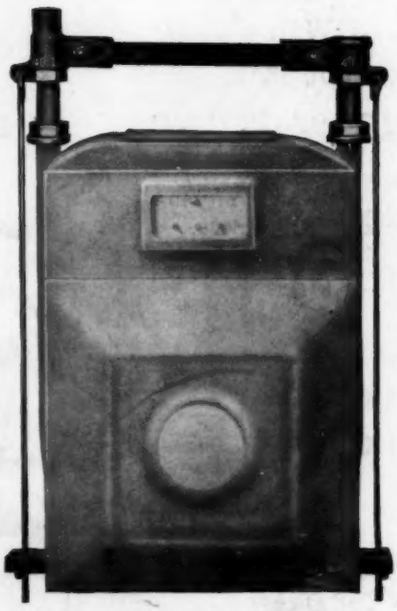
American
GAS JOURNAL
Formerly American Gas Light Journal
EST. 1859

VOL. 117, NO. 2
WHOLE NO. 3357

NEW YORK, SATURDAY, JULY 8, 1922

Subscription $3 per year
$4 Canada $5 Foreign

LATTIMER-STEVENS
METER CONNECTIONS

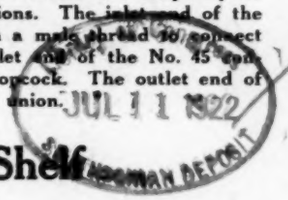


No. 40 Connection with Shelf

No. 45 Connection Apart
(Red brass lock wing cock built into inlet end)

New Style
Simple but Effective

The accompanying illustrations indicate the simplicity of the No. 40 and No. 45 connections. The inlet end of the No. 40 connection is made with a male thread to connect directly with stopcock. The inlet end of the No. 45 connection takes the place of a stopcock. The outlet end of both styles takes the place of a union.



Meter Shelf

The illustrations also show how the hanger shelf is attached to these connections.

With this shelf there is practically no chance for leaks due to washer shrinkage, since the meter is held up tightly at all times against the swivel connections.

Furthermore, there is no chance for strain due to sagging pipes, which often make trouble when the meter setter depends on a bracket shelf instead of fastening his piping up securely. Strain caused by the sagging of the bracket shelf itself is also eliminated.

Samples of any styles free on request

The Lattimer-Stevens Company

72 Yale Avenue — **Columbus, Ohio**

New England Representatives:
The Eastern Service Co.
Boston

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

Pacific Coast Representatives:
C. B. Babcock Co.
San Francisco

INDEX TO CONTENTS, PAGE 4 — ADVERTISERS' INDEX, PAGE 35

The Western Gas Construction Co.

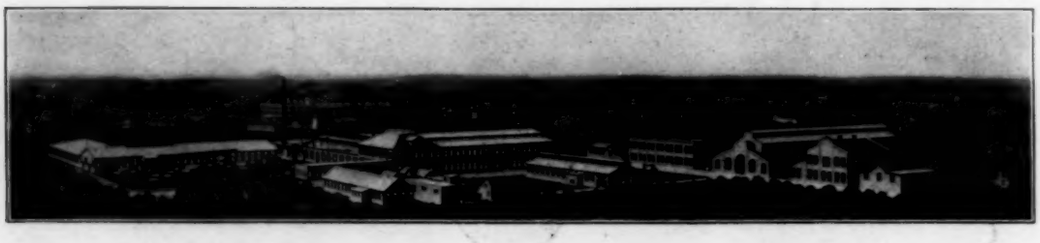
Has the Customer's Viewpoint

Any new problem of construction is approached with the Open Mind, determined to get the facts. The facts in the case, when all known, determine the result. No attempt is made to "sell" any special design for its own sake. On the contrary, the Facts in the Case will demand some definite design of apparatus. Whatever it is, —WESTERN builds it

and offers a Wide Experience in Gas Plant Construction

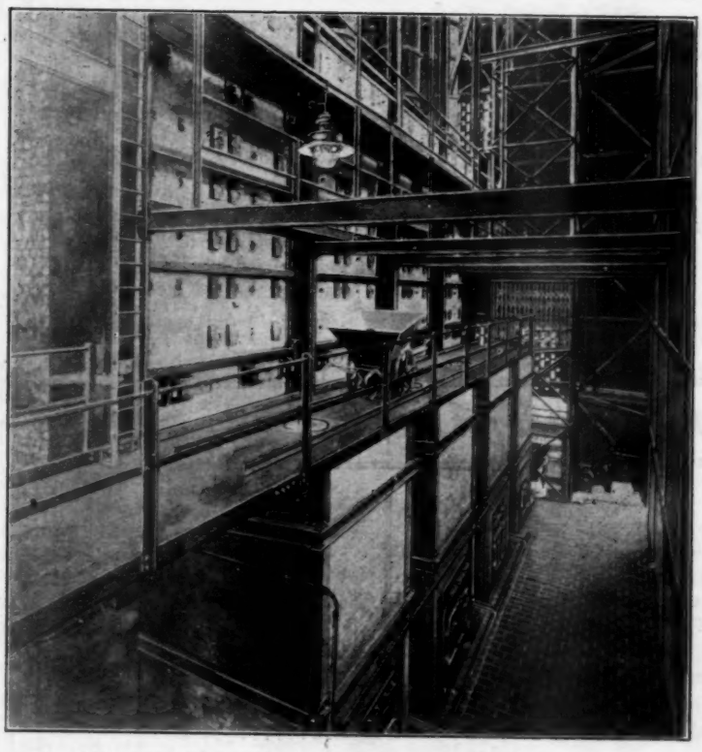
The Western Gas Construction Co.

Fort Wayne, Indiana



GLOVER-WEST

VERTICAL RETORTS



VIEW SHOWING PRODUCER SIDE OF RETORT BENCH

Illustration shows Horizontal Combustion Chamber Damper Boxes and Individual Bench Producers

The Glover-West system is noted for its ease of control by which high heats can be maintained over the length of the retort. Where high heats can be maintained without excessive local heating retort life is prolonged. Maintenance cost low, and output the best possible.

WEST GAS IMPROVEMENT CO.
of America, Inc.
150 Nassau St. New York

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

American Gas Journal

SIXTY-THIRD YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

ELBERT P. CALLENDER, Pres. S. G. KRAKE, Vice-Pres.-Treas. A. M. GLEASON, Sec'y

WALTER A. FAIRSERVIS, Editor

Ismar Ginsberg, Associate Editor

Contents of This Issue

Gas Company Activities in Belgium—By H. Blackburn Harte.. 23

Suggestions for Remedying the Coal Situation—By George Otis Smith 26

Purchasing Department in Unique Position—By W. A. Root.... 27

The Value and Cost of Advertising—By W. J. Reagan..... 29

A New Process of Distilling Tar—By C. Ab-der-Halden..... 32

As the Journal Views It..... 33
The Gas Industry in Belgium
A Budget All Important

Developments in Gas Technology..... 36

Public Utilities Securities Market Report 38

News of the Gas Industry..... 39

Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL. July 8, 1922. Vol. 117, No. 2. Published weekly by American Gas Light Journal, Inc., New York, N. Y. Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

American Gas Journal

Formerly American Gas Light Journal

Vol. 117, No. 2 NEW YORK, JULY 8, 1922 Whole No. 3357

Gas-Company Activities in Belgium

The "Journal's" Representative Learns of Private and Municipal Ownership Abroad

By H. BLACKBURN HARTE, Special Foreign Correspondent of the "American Gas Journal"

Antwerp, Belgium, June 13, 1922.—Advocates of public ownership of gas companies in the United States would do well to study the situation in Belgium. In the two chief cities of this country—Antwerp, the great port, and Brussels, the capital—we have an interesting contrast between private and municipal ownership which seems to prove that private ownership is better for everybody concerned. Consider these facts: In Antwerp, where gas is supplied by a private company, it is sold at a price approximately 25 per cent cheaper than in Brussels, where the municipality operates the gas works. The Antwerp public, therefore, benefits to the extent of a 25 per cent saving in comparison with the gas users of Brussels. At the same time the private company in Antwerp claims that it is being operated at a good profit, whereas the municipal officials operating the Brussels gas services at the higher rate declare that the city is losing money on the proposition and selling the gas at less than cost. So, it appears, everybody in Antwerp is the better for private ownership — the public which pays a lower rate, the company which is making a profit, and the city which is not losing its money by trying to operate a municipal gas service; while, on the other hand, in Brussels everyone is the loser—the city treasury which suffers a deficit through its gas works, and the public which is soaked twice, first with higher gas bills, and second with increased taxes to make up the losses of the municipal gas works.

Mr. Harte, the author of this article, has started a world tour that will take him into every country on the globe. He will visit the principal gas companies and his interviews and operations will be published by the "Journal" exclusively. He is a trained writer and we want every reader of the "Journal" to follow this splendid series.—Editor.

There is another lesson to be learned in Belgium for those Americans who are constantly railing against the gas companies in our cities—a lesson for those politicians who use public utilities as footballs in their campaigns, and those large groups of persons who, through ignorance and prejudice, always look upon gas companies and other utilities as "robbers" and hurl charges of "profiteering" against them indiscriminately. Gas rates in American cities range from 70 cents to $1.75 per thousand cubic feet, varying according to local conditions. People who consider these rates excessive should consider the rates charged for gas in Belgium. In Antwerp, under private management, gas is sold for 41 centimes per cubic meter. This is equivalent to a price of $2.22 per thousand cubic feet in America. In Brussels, under municipal management, gas is sold for 55 centimes per cubic meter, which is equivalent to a price of about $3 per thousand cubic feet in America. Imagine the howls of protest and the lines of indignant consumers which would form at the offices of any gas company in an American city which ventured to charge a rate of $3, or even $2. While the Belgian citizen, with a lower average income than the American, and a more difficult cost of living problem to meet, accepts these rates as fair.

And there is a third lesson to be learned in Belgium, or rather in Antwerp. This is a lesson for those public utilities commissions and other regulatory bodies, and those gas companies which are constantly engaged in expensive litigation and wrangling with each other, in consequence of which the consumer pays more tax money to carry on the expenses of the regulatory body, and also more money on his gas bill to pay the increase in operating costs which the gas company sustains through litigation. Antwerp presents an interesting case of complete co-operation between the municipal government of the city of Antwerp, the Provincial Government of the Province of Antwerp, and the privately-owned company which operates the gas service. Here is how it is done, as told to me by A. F. P. Hayman, general manager of the Compagnie du Gaz d'Anvers (the Gas Company of Antwerp). Mr. Hayman is an Englishman, by the way, who has been in the gas business, both in Great

Britain and on the Continent, for the past twenty-five years. The Compagnie du Gaz d'Anvers is a part of the Imperial Continental Gas Association, a British concern supported almost totally by British capital, and operating gas undertakings in various important Continental cities of which Antwerp is at present the largest.

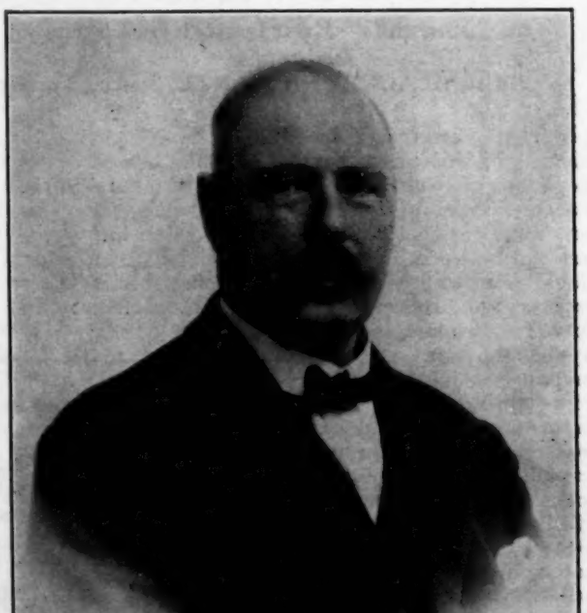
The highly satisfactory co-operation between the company and the city authorities of Antwerp has been attained through a contract whereby the price of gas is fixed on the basis of a formula which takes into consideration the various items of operating costs. Every three months the costs are recalculated and the price is adjusted accordingly. Prior to the consummation of this contract there had been for years, as in most cities the world over, a good deal of conflict over rates between the gas company and the regulatory bodies of the city and the province. Finally, on April 1, 1921, the contract providing for quarterly readjustments of gas rates on an operating cost basis was entered into between the company and the municipal authorities of Antwerp, and sanctioned by the Provincial Government of the Province of Antwerp, whose approval of which was necessary to make the city's entry into such a contract binding. The contract has been in effect more than a year, therefore, and according to Mr. Hayman this plan has worked out to the complete and mutual satisfaction of the company, the municipal authorities, and the general public. The chief items entering into the formula upon which the quarterly readjustments of rates are made are the increase or decrease in the price of coal, increase or decrease in wages, and other such overhead costs. These costs are compared with the costs of 1914, and the price of gas is then proportionately adjusted on the basis of comparison with the price charged for gas in 1914. The present price being charged in Antwerp, 41 centimes per cubic meter is the lowest price being charged anywhere in Belgium, either under private or municipal ownership and, as coal prices and wages are decreasing, it is expected that the price will be reduced further on July 1, when the next quarterly readjustment is due to be made with the city authorities, says Mr. Hayman.

How Costs Have Mounted Since 1914

As this contract provides that rates shall be adjusted on a comparison of present costs and rates with those of 1914, an idea of how the costs of gas manufacture since the war have mounted in Belgium may be gained from the fact that in 1913 this company was selling gas in Antwerp at 14 centimes per cubic meter, or about one-third of the present rate, 41 centimes. The pre-war rate is equivalent to about 77 cents per thousand cubic feet in America, which would fall somewhere into the scale of rates being charged in American cities to-day.

"This contract has brought about the most generally satisfactory condition I have ever seen in the operation of a gas service," said Mr. Hayman. "All parties have benefited—the city, the public and the company. We no longer encounter any difficulty in convincing our customers of the sincerity of the company in its aim to give the best possible service at the lowest price consistent with good business. We have already reduced the price several times under this contract, and as coal is still coming down in price and lowering our operating costs we confidently look forward to being able to make further reductions to the consumer."

The writer spent a day with Mr. Hayman, and with H. W. Gandon, one of the engineers in charge of this company's operations, and learned that here was a very large gas corporation being operated along the most modern and progressive principles—a company worthy of comparison with our largest and most progressive gas companies in the United States.



A. F. P. Hayman
General Manager, Compagnie du Gaz d'Anvers

The Compagnie du Gaz d'Anvers, in addition to serving the city of Antwerp, also supplies gas to 56 communes (or towns) in the Province of Antwerp. The total population served is 600,000, of which 400,000 is in the city and the balance scattered over the rest of the Province. Its actual consumers number approximately 120,000, or, on the average basis of five persons in a family, it may be said that the company is supplying gas to practically every home in its district. It employs an average force of about 2,000 men, and operates three large gas works, each being located on a different side of the city at the best distributing point for its section.

Has Extensive Holdings

The Imperial Continental Gas Association, of which the Antwerp company is a part, also has plants serving the suburbs of Brussels (only the city of Brussels itself is served by the municipal gas works),

and small towns in northeastern France, Holland, Czecho-Slovakia, Jugo-Slavia, Hungary and other parts of northern Europe. The headquarters of the company are in London but it has no interest in any gas works in Great Britain. It was the first gas company to enter business on the Continent of Europe, having been established in Hanover in 1824, and is therefore now only two years from the celebration of its one-hundredth anniversary. Before the war its interests were scattered more extensively through various European countries.

In addition to supplying gas for home lighting, cooking and heating and for industrial purposes, the Antwerp gas company lights the streets of Antwerp, and the majority of shop windows, and the cafes and cabarets which are exceedingly numerous and gay in Antwerp. Mr. Hayman said that gas lighting has been found a great deal more effective than electric lighting for window displays and for lighting effects in the cabarets, and has the additional advantage of being 50 per cent cheaper than electric light for these purposes.

The gas company in Antwerp loses no opportunities for increasing its business. One of the things it constantly does is to keep solicitors at the Hotel de Ville, or City Hall. These solicitors are present at every wedding, and as church weddings are not sufficient in Belgium and all marriages must be performed civilly by the municipal authorities at the town hall as well, these solicitors are able to see every newly married couple in Antwerp, and remind them that it is important to have gas installed in their new homes. These solicitors also watch the issuance of all permits for new homes and buildings, and then visit the architect, contractor or owner to see that arrangements for the installation of gas are included in the plans before the plans go to the builders.

The company is making an intensive and successful campaign to increase the use of gas for cooking, heating and industrial purposes. It has advertised widely and popularized the use of ranges, heaters, lamps and other fixtures, and it maintains a fine store on the Place de Meir, which is the Fifth Avenue of Antwerp, for the sale of these appliances. The appliances sold are chiefly of British and Belgian manufacture.

Operates on Non-union Basis

The company operates its gas works on a closed, non-union, shop basis, and Mr. Hayman declares that it has had no labor troubles since this policy has been in effect. Until recently the employees were unionized, but the unions got unreasonable in their demands under the intoxication of war-wage increases, until the company could no longer deal with them, and it was necessary to adopt the closed non-union shop policy to remain in business, Mr. Hayman said. The wages now paid compare favorably with those paid in other trades in Belgium, and the employees are contented. All malcontents and agitators have been weeded out from the ranks. The company has a welfare department which does everything possible to increase the opportunities of the employees to rise, and to enjoy life, and which is always ready to lend a helping hand to an employee in need. This department has been very successful in making the men realize that the company really has a deep human interest in their welfare, and has cultivated a fine spirit of co-operation and good-will on their part, says Mr. Hayman. Excellent recreational facilities, provided at the expense of the company, are found in the various plants.

Private Versus Municipal Ownership

A word more on the comparison of private ownership conditions in Antwerp with municipal ownership in Brussels. First, I asked Mr. Hayman how it was that his company could supply gas at 41 centimes per cubic meter and make a profit, while the city of Brussels charged 55 centimes and claimed that it was losing. His explanation was as follows:

"In Antwerp we are supplying the best service possible at the minimum reasonable profit. In Brussels it is my opinion that the municipal gas works, selling gas at 55 centimes, instead of losing on it must be making a tremendous profit, but that the city is diverting the profits from gas to other channels to make up for deficits in other departments of the city government. In other words, gas consumers in Brussels are forced to pay on their gas bills for the deficiencies in the city budget. If this is not the case, the gas works of Brussels must be grossly mismanaged, if they are losing money while charging 55 centimes per cubic meter for gas. Either way, it is a poor recommendation for public ownership."

The Other Side of the Story

Next day the writer went to Brussels and sought to get the municipal ownership side of the story. After being shifted around from bureau to bureau, which is the custom of officials of municipal enterprises, I was finally admitted to the office of M. Welvaert, one of the directors of the Service du Gaz of the Department of Public Works. From him I got the information that the city has one gas plant supplying 20,000 consumers, which covers a total population of about 200,000, or an average of ten persons to each gas meter. He confirmed the price of 55 centimes per cubic meter as that now being charged by the city, and declared the municipality was losing money on the operation of the gas plant at this rate. The Brussels gas plant has been municipally operated since 1875, he said, and prior to that time had been in the hands of a private company. Before the war, Mr. Welvaert said, the city was selling gas at 13 centimes per cubic meter for lighting, and for 10 centimes for burning, and had been making a profit at these rates. I asked why it was that the city was now losing money when it was getting a rate of 55 centimes per cubic meter, while a private company in Antwerp could operate at a profit on a 41 centimes rate. Mr. Welvaert blamed the loss on the increased production costs due to the high price of coal and labor. I pointed out that the private company had to pay just as high prices for its coal, and had to meet increased labor costs as well as the city. The response to this was:

"Well, the city of Brussels pays higher wages and gives its employees many more holidays than a private company."

And that was all that could be learned of the mysteries of municipal ownership in Brussels.

Suggestions for Remedying the Coal Situation

A Solution of the Problem for All Time

By GEORGE OTIS SMITH, Director United States Geological Survey, Washington, D. C.

The present lack of public anxiety over the coal situation is not at all novel. The popular feeling toward coal has always been a sort of Irish variety of chills and fever. The average citizen doesn't get thoroughly warmed up on the coal question until he begins to get chilly. Thus it happens that a midsummer coal shortage is likely to be a lukewarm affair. Yet disregard of unpleasant facts does not stave off disaster. Paralysis of industry and transportation on a country-wide scale is the natural outcome of a coal shortage if carried to the extreme that cannot be many weeks distant. Serious as the present situation is, however, there are fundamental problems more insistent for solution than even the pending differences between employer and employee. These basal problems affect the whole coal industry to some degree, but especially the bituminous branch. Clear up the economics of the business and a lasting settlement of labor controversy would become a possibility; leave these questions unanswered, and industrial peace cannot be expected to survive the usual two-year armistice.

We are publishing this article because we believe that every man in the gas industry is vitally interested in the facts it contains. Mr. Smith also presents some mighty logical reasons for a change in the method of coal-mine operation.—Editor.

What coal producers and coal consumers alike need is reform of the business rather than compromise between parties to the controversy, and in this reform it is absolutely essential that the mine worker should co-operate with the mine operator. Too long have the mine owners treated the coal business as private privilege, and too long have the labor leaders with no less monopolistic attitude obstructed every move for underground efficiency and economy. The people's coal costs too much because of the mistaken idea that mine owner and mine worker can continue to fight over contracts and rules. Cheaper coal and larger earnings will come when engineering is emphasized more and bargaining less.

In terms of engineering, the coal industry has a bad load factor; translated into human relations, poorly functioning mines mean poorly employed miners. A longer working year would seem, at first glance, desirable to mine owner, mine worker and consumer alike. Why not get it?

The trouble with our soft-coal mines is not so much the broken year as the broken month, the broken week, and even the broken day. The running time is broken into small pieces, for mine operation is not simply seasonal, it is intermittent. In that theoretical mine of the statistician, the average mine of the country, we find November a longer month than June, by 25 per cent, and June longer than April, by 10 per cent, and yet the working time in a normal November is only nineteen to twenty-one days. And irregularity creeps into the working week and the working day, for Friday and Saturday are normally shorter days than Monday. Granted that the workers in other industries suffer the handicap of seasonal unemployment, our problem, and the national problem just now, is the betterment of the working time of coal mines, and especially bituminous coal mines.

That average mine is located nowhere in particular, and the average working time by States and fields shows marked and significant differences. The average year in the southern Appalachian region is a fourth longer than the average year in the Central Competitive District. With 215 days as the average year for the whole country, we find a 273-day average year in New Mexico, 247 days in Alabama and 223 days in West Virginia, as against 202 days in Missouri, 197 days in Illinois and 192 days in Oklahoma. Markets, quality of coal, mine costs (including wage scales) and car supply are all factors contributing to these differences in mine employment.

Unfortunately, we can gauge results better than determine causes; we know the industry to be wasteful, but where are the leaks? The lack of efficiency and the losses due to irregular operation are not universal, for many individual mines work 300 days in the year. Indeed, in 1913, when the bituminous mines averaged 232 working days, one-fourth of the half-million men in the industry were employed in mines that worked 280 days or more and nearly 50,000 of them in mines that worked 300 days or more.

The large consumer can do much to smooth out the irregularities of mine operation by making long-term contracts, even five-year contracts, and providing for delivery to suit the mine as well as himself. Such contracts could be made at lowest prices, for with long-term contracts in hand the mine operator could reduce his costs to a minimum. With such a steady market, full-year operation and steady employment would become possible—the mine worker would earn a year's

wage and the public would not pay for idleness. That reform, however, must begin at home, not at the distant mine—the consumer must start it.

With market demands more regular, it will become even more obvious that the overdeveloped industry must suffer deflation; fewer mines and fewer miners can and should furnish the needed coal. Mr. Peabody, as a representative operator, admits that one-third of the operating mines represent a burden on the industry, and he suggests their elimination through bankruptcy. Ellis Searles, the editor of the *United Mine Workers' Journal*, admits that 150,000 miners, like one-third of the mines, should be eliminated, and he suggests that they leave the mine for the farm. Mr. Peabody estimates that the idle days of our bituminous mines involve an annual loss to the capital and labor employed of not less than $400,000,000, and I suspect that most of this loss is paid by the consumer.

A longer working year for a reduced force is the only possible method of bringing about the lower wage scale and the larger annual earnings, both of which are generally needed. It is largely by reason of the high unit rate of wages that coal costs too much, and on broad economic grounds it may well be questioned whether the producer should be paid a wage out of all proportion with the wage of the consumer. Can a five-dollar-a-day workman afford to buy coal mined by a ten-dollar-a-day mine worker?

Whenever public interest is aroused in the coal question, the defensive note of the coal men is likely to be that appeal for "less Government in business," an appeal with which I sympathize so far as governmental regulation might drag politics into business. The political danger that really confronts the coal business is that the leaders in the industry will too long be blind to the trend of the times. In this year of the independence of the United States of America, the 146th, the American people are not reactionary—the old ways of doing business are not to be the new ways. Our reverence for the privileges and rights of private business is giving way to a new attitude: we are asking what is private business and what is public business. Forced to extremes by private disregard of public interest, this tendency in popular thought may even become dangerous, and Secretary Hoover's recent statement to the operators, that "if our coal industry does not govern itself it will surely be governed by the public," was a warning of that danger. So I suggest that if "less Government in business" is desired, the best means to that end is *more business in business*. Our best mines are so planned and equipped and operated as to demonstrate how efficient coal mining can be, and a similar statement can doubtless be made of certain units in the merchandising of coal; yet the average coal mine and the average coal yard are far from being gratifying exhibits of that engineering ability of business thrift which we like to regard as typically American.

In bringing about the adoption of these higher standards and more businesslike practices in the coal business, public opinion must be the force that refuses capital to open or operate unneeded mines, that refuses to pay wages or profits figured on an expectation of one-third idleness and two-thirds work, that encourages off-season purchase and storage of coal by consumers—and, above all, we need an enlightened public opinion that puts a ban alike upon the selfish disregard of the interests of the producer of coal by the purchaser and of the interests of the consumer by both the mine operator and the mine worker. The present unhappy condition of the coal industry is not an aftermath of the war; rather the blame for most of the evils that burden the coal business and have burdened it for years must be laid on the common garden variety of blind selfishness. The sharp buying of coal and disregard of contracts whenever the market favors the buyer, the profiteering by the operator or dealer when his turn comes, the collective bargaining with the walk-out as the club—all these bring unnecessary hazards into the business and add useless costs to the product.

The general welfare is tied up with a regular supply of lower-cost coal and larger earnings for those who produce it. And the responsibility for mending the broken year needs to be shared by the many who can help thus to bring about the economic and social benefits arising from coal that the nation's industry can afford to buy, and from mining towns of which the nation need not be ashamed.

Purchasing Department in Unique Position*

Standardization Aim of Most Buyers

By W. A. ROOT, Bronx Gas & Electric Company

This subject covers such a wide field of activity that it could be discussed from many different angles, each of them interesting, to say the least; and yet to thoroughly set forth any one phase would be impracticable, and for that reason the remarks to follow are general in character.

In this era of economic adjustment, deep concern is being given to the purchasing power of money, and the study of past and present performance of trade balances, wages and commodity prices is quite necessary that a proper forecast of the future may be obtained. In such a study recognition must be given to credit, raw material—from which a manufactured product results—and the distribution of the finished product, and all through this cycle the art of purchasing plays an important part.

Because of the correlation of purchasing to finance, manufacture and distribution, the purchasing department of any modern industry occupies a distinguished position and the one in charge should carry the same respect and authority that is accorded to the company's officers. He should sit in on all conferances relating to manufacture or production, distribution and finance, that his trained knowledge of raw materials, their source, and the supply and demand may be obtained; that he may know of and prepare for any change in manufacturing methods; that his

*Paper presented at commercial meeting, Empire State Gas and Electric Association.

knowledge of processes, machinery, etc., may be gained and, in the case of finance, his knowledge and judgment is most valuable in regulating such matters by pointing out advantageous times to purchase raw materials in quantity, or by curtailing purchases to meet a stringent financial situation. His advice and co-operation should be sought by all departments because the very nature of his calling and his wide field of information enable him to render valuable assistance.

This may appear to place too much importance on this department and its head, but why not? Doesn't he spend most of the money? Isn't the department responsible for all the material owned? Doesn't that material represent money, and is it not just as important in the assets column in the trial balance as cash in the bank? Yes, even more so. It has been said that many manufacturing concerns count their cash discounts on raw-material bills as their profits.

It is a fact that in the past the purchasing departments have not received the recognition due their efforts and results, and it took the necessities of our recent world conflict to show the value of the purchasing agent, and his department to industry. The practice is rapidly disappearing of curtailing the authority of the purchasing agent and confining him to mere details, and it depends entirely on the purchasing agent himself as to whether he will rise to the standard his calling has set.

The purchasing agent of to-day is not the man of yesterday. He is a student of supply and demand, an economist and an authority, and possesses good judgment, unimpeachable integrity, and a pleasing personality, enjoying the high regard of his fellow men.

Let us for a moment study the relation of the purchasing department to see how they co-ordinate. The sales manager, through his salesmen, is in constant touch with the buying public, is feeling the pulse of demand, and by conferring with the purchasing department a plan of meeting this public demand is prepared. It may be a matter of the quality of the product the sales department is endeavoring to dispose of, or a matter of price competition in the selling field. Surely these subjects are most properly handled by such co-operation. The purchasing department is called on to assist the sales department by securing special prices on quantity purchases, or by giving particular attention to prompt shipments, or special appliances are required to meet a particular sale, and again the puchasing department meets the request for information and assistance. Frequently the purchasing department can give the sales department selling arguments or a very practical nature, and pointers about the special merits of the appliances the sales department is going to sell. Again, by conference between the two departments, overstocking—especially of seasonable goods—can be avoided, which, in the utility field, must be carefully guarded against due to the rapid improvement in the utilization and design of appliances.

Standardization a Goal of Purchasing Agents

Standardization of materials is one of the very important goals of modern purchasing, and in this endeavor the combined efforts of the production, engineering and sales departments with the purchasing department is producing very satisfactory results, which as years go on will mean untold savings to the public at large in the quality and price of the article furnished. The best example of this is the Ford car, which is a standardized product, and Mr. Ford was so wrapped up in this idea that he would rather lose than give it up. The story is told of one of his sales managers who, in the early days when the Ford car was struggling for recognition, came in one day all excited with the proposition that he could sell 1,000 Ford cars to a firm in Illlinois, payment to be made in advance of delivery, if Mr. Ford would paint the cars a maroon color. Mr. Ford's reply was, "We will be glad to sell them the cars and the color will be black."

One of the most fertile sources of information available to the purchasing department is the message of the traveling salesman. He comes as the personal representatitve of his firm, prepared to explain in detail the product he is selling, its merits, its quality and performance, with an earnest endeavor to help the purchasing department obtain those ideals they search for—quality, price and the reliability of the source of supply. The traveling salesman should always be courteously received and listened to. He is in a position to often help you out of a difficulty, directly or indirectly, and generally is well versed in the practices of allied industries. The practice of setting special hours for interviewing salesmen, or of keeping them waiting unreasonable lengths of time for an interview is to be deplored. If you haven't any business for them, so inform them, and they in turn will save your time and their own.

Nothing has been attempted in this paper in the matter of purchase routine. That is detail and is governed largely by the size of the organization. But in closing it is suggested that all firms enroll themselves or their purchasing department managers in the National Association of Purchasing Agents, or the local section of that association, if one exists, for the reason by so doing they avail themselves of the wonderful work of that association and its committee work of specialists in every line of purchasing, bringing as it will to the firm enrolled and its purchasing department a source of information and assistance which will quickly reflect itself in the personnel and activity of their own organization.

Suggest Revision of Government Specifications

Suggestions for the revision of governmental specifications for gasoline, kerosene, lubricating oils, fuel oils and other refined petroleum products, contained in Technical Papers 305 and 298 of the Bureau of Mines, were considered at the third annual open meeting of the Interdepartmental Petroleum Specifications Committee, held July 3 in the Interior Department Building, Washington, D. C. N. A. C. Smith, petroleum chemist of the Bureau of Mines, presided.

Dr. T. H. Delbridge, chairman of the advisory board which was formed a year ago to act as a medium of contact between the committee and the various industries interested in the matter of petroleum specifications, presented a number of detailed criticisms which were supplemented by others present. The committee plans to take action on these recommendations and to promulgate revised specifications very shortly.

The Value and Cost of Advertising

How They Do It in Utica, N. Y.

By W. J. REAGAN, Commercial Manager, Utica Gas & Electric Company

Good-will is gained primarily by good service. But hundreds of business men have proved that the growth of good-will can be greatly accelerated by advertising. Moreover, your mental property—like your physical property—tends to depreciate. The average American is quick to notice poor service, prone to forget good service. You must keep him constantly reminded of the good service which he is enjoying and will continue to enjoy. Advertising is the most effective way of doing this.

In other words, advertising builds, maintains, and increases the value of your mental property—property more important to-day than ever before in industrial history.

Advertising plays an increasingly important part in the commercial activities of public utilities. A greater interest in public relations work is noticeable in whatever section of the country you care to look for it. Utilities are slowly coming out of the dark and turning the light on themselves.

Everyone who reads newspapers and magazines that both branches—gas and electric—are doing far more advertising than has ever been done and a serious and intelligent bid is being made for public interest and good-will.

Advertising or publicity is an organized effort for creating or correcting the opinions or habits of the people. What we really buy when we buy advertising is mental impressions. This conception repeated is the power that builds good-will.

Opinions differ as to what the public will accept as advertising. In the large field of advertising, some have a wrong impression of themselves as publicists; their mistake is one of judgment and not of heart, as illustrated by the following anecdote:

An advertising man going home one night entered a subway train. It was late and the man next to him began to talk. "What business are you in?" he asked. "The advertising business." "Is that so? I used to be in the advertising business myself. I gave it up and went into the rag and bottle business. I was sandwich man for a theater for six months. Say," and he leaned over confidentially, "ain't it hell when the wind blows!"

One way to make advertising pay the most, is to employ a trained advertising or publicity man to take charge of your advertising and public-relations work.

Provided your company cannot afford to employ a man for his full time, get a part-time man. Frequently it is possible to employ someone connected with a local newspaper—an editor or reporter—to do the work on a part-time basis.

And when you get an advertising man make him more than a mere explainer of policies long after they are formulated, or actually put into effect. Advise with him as to public relations. Tell him in advance what you have in mind and ask him how the newspapers and the public will take it.

The members of the commercial section of the Empire State Gas and Electric Association were deeply interested in this paper, which was presented at their recent meeting. Mr. Reagan has presented some interesting guides for all utilities to follow.—Editor.

Copy should be written by someone who understands the people who are to be influenced. It is no handicap for the copy writer to learn our business thoroughly, but to understand people is much more important. Consequently it is quite possible for advertising agencies to write better copy than any one in the utility's organization, unless a special copy department is maintained. The exception to this condition is the reason that service agencies have been so successful. When the agency's services are available the plants are visited by their representative, and the functions of the meter man, lineman, test man, trouble shooter, service department, ledger department, treasurer's system, the hydraulic plant, the water shed, the carrier current system, are investigated and visualized. After several weeks of searching, talking to and questioning employees, the agency man returns to his own organization, relates his impressions and, after many conferences, the angle to be exploited is decided on. Thereafter the copy man, space man, the illustrator and the type man are charged with their respective assignments, and something worth while is produced.

Getting Constructive Criticism

Incidental to the agency man's tour of inspection, he discovers something wrong—a glaring inconsistency, opposing his ideal of the service which he intended to broadcast. The utility organization, through the proper channels, will receive his constructive criticism, as coming from the "man in the

street." His point of view should be valuable. Many times suggestions of this nature, when followed, are productive of much good to the organization and service alike.

Similar service is sadly lacking in most instances where the publicity man is an established part of the organization. His constant association with various department heads establishes a familiarity which tends to tolerate some breaches of discipline and departures from the formulated policies. This state of affairs is detrimental to the utility's well-being. In other words, the publicity man gets into a rut. Opportunities to receive, on short notice, the approval of the executive, or his company council, in order that some explanatory write-up may be published on a mooted point which has come to his attention, or to discuss innovations for future development of service, are fewer, after the officers of the company begin to think that they cannot be bothered further with these matters. He is absorbed in the company's routine. He loses his initiative, his critical viewpoint, and his value is unconsciously curtailed.

On the other hand, it is not an ideal condition for the management of the advertising to be in the hands of an outside organization. As you know, there is much more to advertising than the printed advertisement, and a person should be in command who knows both the public and the business. Such a manager uses the outside experts merely as assistants and counselors.

The Initial Step

The initial step for any company to take before attempting publicity is to analyze its service and determine whether it is giving the best service that it can under existing conditions. This does not mean service equal to that of any other company regardless of financial conditions. It means the best possible service under the circumstances. If the facts in the situation prove that the company's condition permits no improvement in the existing service, the company need not fear to begin advertising.

The general public seldom will demand better service than that to which it is entitled if it knows the facts.

Having disposed of the question of service, the management should subject itself and the entire company personnel to close scrutiny in regard to its attitude toward the public. Concretely, the central-station manager who advertises one policy in the newspapers and permits his employees to carry it out half-heartedly is largely wasting his money solely because they have not had the plan explained. His employees come in closer contact with his customers than the newspapers. If they tell the same story as the advertising, the chain is complete and the advertising in the papers and the advertising by employees supplement and strengthen each other. His own business is a normal school. He can reach out directly as the head of it and lecture the public "pupils," but how much easier it is to "teach the teachers" and have them explaining his policies in detail as they meet the customers.

Copy should not be written until the company's service—as previously described—has been fully attained, and should be an expression of that service. It won't do for advertisements to be simply strung together without thought of their bearing on one another, or their suitability to the purpose of the campaign. A so-called "clever" idea is adopted as one advertisement. Next month another idea is submitted by some outsider without the slightest notion as to what the advertiser is trying to accomplish, and it is purchased. Such advertising is like trying to kill a deer by shooting into a thicket in any direction, upon the theory that game may be hidden there; or like trying to build a house by throwing a brick here and another there, instead of placing one upon another with mortar between.

"Series" Not Necessary

It is not necessary that advertisements be made into an obvious series and labeled 1, 2, 3, etc. Indeed that might be done and still the really vital connection be absent. What is desirable is that the manager shall see the connection himself—that he shall have a distinct purpose in his campaign and that he shall build his advertisements with a clear idea as to how each one is going to push the campaign a little nearer to the goal.

The utility problem is intricate and involved and is difficult for the layman to understand. The objective to be attained should be a clear, concise explanation of the functions of the various departments of our organization, service and corporate being, couched in the newsy style of the newspaper reporter, in accordance with the angle of the "man in the street." In following this suggestion down I have tabulated some of the subjects which our company has exploited in its various campaigns.

We began with a clear statement of what we proposed to publish. About our physical properties, distribution system, wires, poles, transformers, meters, large coal piles, the yearly cost of the coal we burn; our service men, meter readers, test men, linemen, stokers, switchboard tenders, the training these men receive, the risk they assume to insure uninterrupted service, our policy in extending gas mains, electric feeders.

What Has Been Told

We have told them:

What would happen if the power was off for twenty-four hours.

Told them about the function of the Underwriters' Association.

Given the electrical contractor a boost.

Adopted a symbol and included it with each piece of copy.

Spoken about our power engineers, our lighting engineers—how these men can improve factory conditions, increase efficiency and profits for the manufacturer.

Given our telephone number, told them that we maintain telephone operators on our switchboard all day and all night every day in the year.

Explained that we must trim their trees in order that the street-lighting units may properly illuminate the thoroughfares.

Told them we needed their co-operation.

We have briefly related the stories: "Back of the Button"; "Back to the Burner."

We have told them that our experts read meters as readily as they tell time.

Compared the registration of ten meters to ten watches.

Explained the meaning of our peak loads—gas and electric.

Told them of the size of the gas holder, making a comparison with objects and quantities which are met in daily life.

About our preferred stock.

Exposed the fellow who is a chronic kicker; asked them to challenge some of his wild statements.

Advocated economies in the use of the gas range and the electric appliances.

About the functions of the Public Service Commission; how their meters are required to meet an established standard.

About our voltage, regulators, blowers, governors, etc., not as machinery, but how they improve our service to the consumer.

Our efficient methods of burning coal, how much nearer we approach complete combustion than the ordinary householder or private plant engineer.

About the taxes we paid, established yearly, weekly and daily costs.

Opportunity is offered during times of stress to make a comparison of your rates with the cost of living.

In addition the company is carrying on a scheduled customer-ownership campaign, with the advertising regularly appearing in the local newspapers. These advertisements are so timed that no single issue carries two—good-will and security.

Newspapers Most Direct Route

The newspaper is used by more advertisers, reaches more people, and reaches them more often, than any other advertising medium. They produce the maximum of result. Many times the subject matter will be of the moment, necessitating publication the same day or thereabouts. It is a logical conclusion, therefore, that in the interest of sustained attention, quick service and widespread clientele, the newspaper can almost be relied upon as the sole medium of contact.

Probably the most wasteful expenditures of money in the advertising field is that for space in programs, souvenir booklets, special editions and publications, without bona-fide subscription lists. Beware of all of them.

Budget for Expenditure

The recognition of the principle of correct budgeting has taken advertising out of the field of sporadic or uncertain expenditures. The utility can know accurately from clear and scientific analysis just what they are investing in advertising and why, and that the total amount so invested is absolutely based upon a definite program.

Under the old idea of advertising as mere paid publicity, it was entirely natural that it should be regarded as something that could be carried on intermittently, but advertising for the education of the public mind—the kind of advertising that must be done to-day to drive the public through the door of understanding and co-operation, needs to be carefully planned and unfailingly carried out.

Department stores of recognized standing do not plan to spend more than 2 per cent of the gross receipts per year for advertising. Businesses that are building up must spend as high as 5 per cent. Merchandisers of class and distinction spend 7 per cent. Dealers in new electrical appliances are in the latter class. However, they are favored through the manufacturer advertising and the ratio is consequently less.

With operating charges, taxes and fixed charges amounting to about 75 per cent of the earnings, the remaining 25 per cent may be spent in securing business. It is assumed that the cost under consideration includes the necessary effort of the commercial department devoted to holding the existing business as well as securing new business. It is conservatively estimated that one-third of the total new-business appropriation can be budgeted for an advertising fund. Experience has shown that the newspapers should receive better than one-half of the advertising appropriation.

Another formula which closely checks the foregoing relates that if companies will intelligently apply only 1 to 1½ per cent to their annual gross receipts to advertising, assigning ½ per cent to goodwill and the balance to merchandising, they can take advantage of every form of co-operation help to the fullest extent and put themselves in the strongest possible position.

National advertising appropriations in percentage of gross sales:

Arrow collars	3.5%
Cadillac automobiles	1
Colgate	2
Fatima cigarettes	5
Sears-Roebuck	10
Kodaks	3
Northern Pacific Railroad	1.9
Dutch Cleanser	10
Ruud Heater	2.5– 3.5
Union Pacific Railroad	2.5

The recent announcement that the New York State Committee on Public Information has started to function primarily through the issue of a weekly bulletin which will be furnished newspapers, civic and commercial clubs, company executives and to other individuals and institutions is welcome news.

It is pleasant to realize that the utilities have finally been organized for this specific purpose. Undoubtedly valuable and worth-while results will be achieved. Great assistance will be rendered to the local company publicity men. The development of many of their themes to local application will fill a long-felt want. The specialized and periodic publications will be much appreciated.

One of the greatest needs will be fulfilled and we should work hard for its success. Every gas or electric company should see that the utmost newspaper publicity is given the copy supplied, knowing that the result of co-operation is this endless state-wide chain will bring results which will benefit mutually every company in this State.

The purpose of this paper is to treat the subject of copy and its preparations rather than the complete scope of advertising. Hence reference to electric signs, billboards and other equally valuable features are omitted.

A New Process of Distilling Tar

A French Apparatus Applicable for Use in Gas Plants

By C. AB-DER-HALDEN, Journal des Usines a Gaz, 1922; Pages 113-117

General Considerations

Of all the by-products that are derived from the purification of gas, tar is the only product which generally is sold in the crude condition. Ammonia must be converted largely into sulphate and even the spent purification masses have been subjected to a certain amount of washing to extract the prussiates from them.

Nearly all gas plants prefer to sell their tar in the crude condition, and it must be admitted that the difficulties, surrounding the treatment of this product to recover therefrom various refined products have been very great and have been unsolved up to the present time. They have been directly responsible for this condition. They may be divided into two groups. In the first place the by-products that can be produced from tar may not have had a sufficient value to render their production a justifiable operation. On the other hand, the distillation of tar has always been a very delicate operation, requiring special technical skill, such as is not found in the average gas plant.

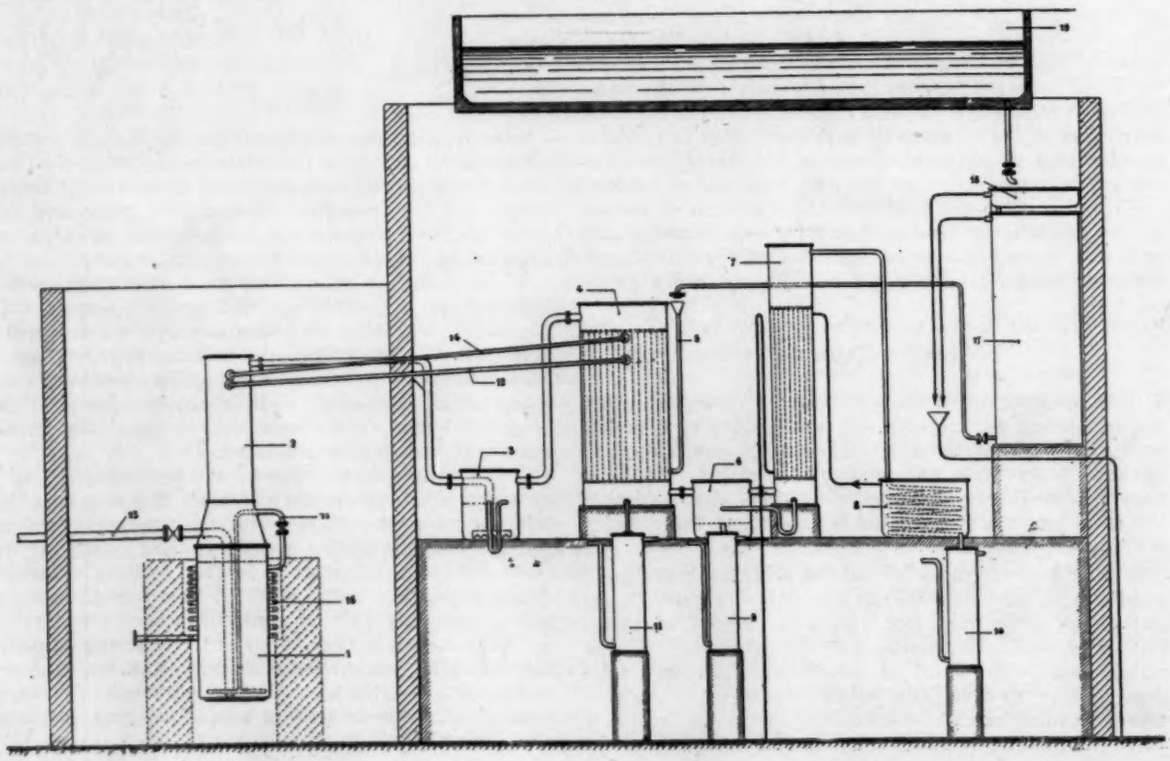
As far as the first cause is concerned, it is evident at the present time, without further discussion, that these products have now a considerable value and there is no reason why distillation of tar cannot be carried out as advantageously from an economical aspect as the distillation of ammoniacal liquors. Gas tar can be made to yield two products by distillation, one a pitch which has 1.33 times the value of the original tar and the other an oil which is worth three times the crude tar. These products are recovered in the ratio of one of the oil to 1.5 of the pitch.

The technical difficulties of the distillation of tar have been the real reason why the process has not developed. This refers, of course, to the distillation of the tar in the gas plants where it is produced. It has been very difficult to adapt the regular process of tar distillation to the average gas plant, because of the complexity of the operating details. Accordingly, these plants have been content to either burn their tar under the boilers or else sell it to companies that made a specialty of tar distillation. However, between the sale of crude tar and its conversion into phenol and pure anthracene, there exists a number of methods of transforming the tar into simple products which are easily salable and which constitute a new source of profit to the gas plant.

Details of the Tar-Distillation Process

The process, which will be discussed in this article, was invented by the author for this very purpose. The distillation of tar appears to be a very simple matter at first glance. From a theoretical standpoint

(*Continued on page 34.*)



As the Journal Views It

The Gas Industry in Belgium

We hope that every reader of the AMERICAN GAS JOURNAL will be sure to read the leading article this week. It is a vivid description of the gas industry in Belgium, written by a man who knows what to seek and then how to tell what he has learned. Right here we might say that this is the first of a series of articles from Mr. Harte that will tell the story of the gas industry in every country on the globe.

One of the most interesting points that Mr. Harte brings out is the sharp comparison between private and municipal ownership and operation in Belgium. The explanation of why it costs more to supply gas to the residents of the city of Brussels is most appealing. We like to contemplate the caliber of man who says, "Well, the city of Brussels pays higher wages and gives its employees more holidays than a private company." We wonder just how this applies to municipal plants in the United States.

But there is one distinct difference betwen municipal operation abroad and in the United States. That lies in the fact that in this country it is the habit to have deficits in operation of the plant which are made up by some form of taxation, whereas abroad the shoe is on the other foot.

The progressiveness shown by the Antwerp company in going after appliance sales also is extremely interesting. Many will say that it is impossible to maintain a solicitor or salesman at a marriage-license bureau to sell appliances but there is a variation of that idea which can well be applied to the United States. The natural question comes to mind, "How many gas companies watch the columns of newspapers for announcements of weddings and through this information consummate sales? It would be interesting and instructive to compile some data on this question.

From Mr. Harte's article it is quite evident that gas lighting has not seen its peak abroad, but rather that the aggressive methods used are producing really remarkable results. Imagine great shop windows lighted by gas. How many are there in America? And yet the American woman goes abroad for her styles, and surely the display of those styles has much to do with the success of those shops. Here is another question that is worthy of deep pondering.

Taking it all in all, this article supplies much food for thought.

A Budget All Important

It is just about this time of year that executives appreciate the value of a budget in the operation of a company. If a budget has been carefully and properly prepared the expenses of replacement or additions has been provided for and there is no delay experienced in carrying on the work.

But there are many companies that do not operate under the budget system and they are accordingly figuring ways and means to provide for the necessary extensions and improvements.

It is the month of July that shows how valuable is this system. Efforts to raise funds in a hurry when the warm weather is holding sway are usually exhausting and sometimes futile, and the result is that a company has to patch where it should replace.

Making up a budget at the beginning of either the fiscal or calendar year not only shows the executive what is going to be necessary during the succeeding twelve months but it also acts as a check on expenditures by department heads who sometimes view the needs of their departments through magnifying glasses in relation to the company as a whole. When the rule has been fixed that the sums included in the budget are the maximum amount that will be allowed then there is bound to be care exercised in the management of the various activities. Thus the budget gives the executives a check rein on operation that cannot fail to keep him in close touch with all activities.

The budget system can be applied to any gas company, no matter what its size, and it should, or some close substitute should, be used. This is a step in the direction of efficiency that does not require any high priced efficiency expert with a lot of theories. Each department head should know what his requirements for twelve months will be barring accidents or emergencies, of course, and an estimate of cost can be made by any man who is in touch with his work and with the developments in the gas industry.

Then again, a carefully prepared budget is one of the best supporting arguments that any executive can have when he goes out to seek capital. It is the most convincing kind of exhibit and it gives a banker an opportunity to know something of the possibilities of growth of an organization in which he is asked to invest.

A budget is a mighty handy thing to have.

A New Process of Distilling Tar

(*Continued from page* 32.)

all it involves is the raising of the temperature by degrees in order to separate from the tar-distillation products in increasing molecular weight and of increasing boiling point. The residue in the still is pitch. In actual practice the distillation does not take place as simply as might be expected. It is only necessary to make an experimental distillation in the laboratory in a glass flask to arrive at some conception of the difficulties involved.

In the first place, when the crude tar is heated to a temperature in excess of 100 deg. Cent., the water of combination contained therein causes emulsification of the entire mass in the still, which thereupon overflows. One of the most essential operating details of the distillation process is to conduct the operation of driving off the water with extreme care, so as to avoid the formation of emulsions and the entrainment of particles of tar with the steam.

After the dehydration is complete, further distillation becomes more simple. However, due to the complexity of the composition of the tar, the nature of the products that are distilled from it between definite temperature ranges varies considerably. The intensity with which the heating is carried out and the rapidity of the distillation have an important bearing on the results obtained. Accordingly, two successive tests made on the same tar will not give the identical sesults unless they are conducted under exactly the same conditions of temperature, rate of heating, etc. Finally, it will be found that in order to distill the products having the highest boiling points it is necessary to heat the glass flask to a temperature which is in excess of the melting point of the glass.

These difficulties are, of course, considerably accentuated when the distillation is carried ont on a large scale in the plant. In the first place it is very necessary to carry out the dehydration of the tar with great precaution, so as to avoid dangerous overflowing of the still. The operators must be taught to exercise the greatest care in this operation, and special apparatus may be used for this purpose. Then it is necessary to watch the flow of oily distillates and to take frequent samples of the same, which are immediately and quickly tested to determine whether the fractions are being separated properly. This, likewise, requires an operating force of a high degree of intelligence.

Finally the last step in the process, wherein the temperature is raised to a high point in order to obtain the heavy distillates, must be carried out with great care, as otherwise the apparatus will soon deteriorate and the pitchy residue will have no value at all. It is easily seen from what has been said above, why distillation of tar has not been undertaken as extensively as it might have been by gas plants. The plant had to contend with the technical difficulties of the process, the high cost of the installation and the necessity of using highly skilled labor in the operation.

Distillation by Entrainment

Instead of distilling the tar by heating the still, which is set in the brickwork of a furnace, the tar is distilled in the new process by passing a current of steam through it at a temperature of 100 deg. Cent. The distillation products are condensed. Right at the outset the objection will be made that this method of procedure introduces water in the distillation products. The condensates are made up of mixtures of water and light oils. At first, about 50 per cent of oil is entrained with the water, but this increases thereafter until no oil comes over at all under the conditions of the distillation.

At this point the temperature of the tar is raised, while at the same time the temperature of the steam is raised by superheating to the same point. The distillation proceeds further, resulting in the separation of a new oily traction. This stage of the distillation then ceases, and the temperature of the tar and of the steam as well is increased to definite point, to correspond to the character of the fraction that is desired. The distillation proceeds in this fashion, each rise in the temperature resulting in the production of a separate fraction of the distillate. The distillation of the tar is complete, after a temperature of 250 deg. cent. has been reached and maintained for the proper period of time. In the direct heating process the temperature had to be increased to 450 deg. Cent. before distillation was complete.

This distillation was first carried out experimentally in the laboratory and the good results obtained indicated that it could be used to good advantage in commercial installations. The principle on which the process operates is simply the entrainment of volatile bodies by steam. It is well-known that in the distillation of a mixture of water and volatile substances, which do not mix with it, the boiling phenomena are regulated by the two following laws:

1. The temperature at which the mixture boils is lower than that of the constituent, possessing the lowest boiling under atmospheric pressure.
2. The respective quantities of water and the volatile substance which pass over in the condensate are proportional to the vapor tensions of these two substances at the boiling point of the mixture.

These two laws indicate that all the volatile products can be removed by entrainment in a current of steam at 100 deg. Cent., but that only those products whose vapor tension is fairly high at temperatures lower than 100 deg. Cent. will be entrained easily. This is the reason why the light oils contained in the coal tar are easily entrained, so that only 50 grams of steam are required to entrain 100 grams of oil. But as the vapor tension of the oils decrease, the difficulty of entrainment in a current of steam increases in like measure. It has been determined that oils which boil at 200 to 250 deg. Cent. require 8.66 times their weight in steam, and that the oils which boil between the temperatures of 300 to 350 deg. Cent. require 115 times their weight in steam to be entrained at a temperature of 100 deg. Cent. The distillation of the coal tar by entrainment with steam is, accordingly, impossible from a practical standpoint when the temperature of the steam is 100 deg. Cent. Consequently, it is essential that the temperature at which distillation takes place—that is, the temperature of the tar in the still and of the steam—is raised to such a point that the volatile products that are to be distilled from the tar possess the requisite vapor tension. Practical experience has shown that this temperature need never exceed 250 deg. Cent.

Practical Application of the Process

From what has been explained above, it is seen that the current of steam passing through the heated coal tar entrains the volatile fractions of the tar and leaves behind a pitchy residue. It is accordingly possible to regard the tar as constituted empirically of a volatile fraction which can be removed by steam distillation, and a fixed fraction which cannot be entrained in the current of steam under the conditions of the experiment. Consequently the industrial operation of the process will consist on the one hand of separating the entrainable fraction and, on the other hand, of condensing that fraction so as to produce products of commercial importance.

The accompanying diagram indicates the apparatus which is employed to carry out this process in a continuous manner. The tar, which is preferably fed to the apparatus from a storage tank 19, is passed through a filter 18 and then separated from any ammonia that it may contain in the decanter 17. It is drawn off from the bottom of this decanter and carried to the dehydrater 4. This apparatus consists of a number of vertical tubes arranged within a column and provided with headers, so that the tar is heated to a temperature above 100 deg. Cent. by the heat contained in the products of distillation of a later step in the process. Both the moisture in the tar and the light oil constituents are removed in this manner, the condensate being caught in the condenser 11. From the dehydrater the tar is carried to the column 2 through the pipe 12. The still consists of a retort 1 which can be heated to any desirable temperature. This is surmounted by a column 2 in which the tar trickles down over the packing which fills the tower and serves as the contact medium. A current of steam, which is superheated in the coils 16, passes through the entire tower from bottom to top, and effects the entrainment of all the volatile products that can be removed in this manner at the temperature of the operation. The pitchy residues are accumulated in the retort and are removed continuously as they reach a definite level.

As has been mentioned, the column effects the first stage of the operation; namely, the separation of the volatile fractions of the tar from the pitchy residues. The mixture of volatile products and the steam leaves the column at a temperature which varies habitually from 150 to 170 deg. Cent. The vapors go to the separator 3, where the temperature is lowered to about 130 to 140 deg. Cent. by natural-air cooling, aided whenever necessary by the injection of cold water. In this manner condensation ensues and there is recovered a product which is known as the "anthracene" fraction.

The residual vapors leave this apparatus and enter the dehydrator at the top. They pass through the bank of tubes and are cooled by transference of their heat to the crude tar, a process which results in the dehydration of the latter. Due to this the temperature of vapors falls to about 100 deg. Cent. and a new condensation product is recovered which is known as "heavy oil." The heavy oils are caught in the tank 11.

The vapors of the oily distillates, which have not been condensed in the first tubular condenser 4, pass into another tubular condenser, which is shown at 6 in the diagram. There they are cooled down to a still lower temperature by circulating cold water through the tubes. This apparatus in connection with another device known as the separator and shown at 7 in the figure serves to recover a third fraction from the oily vapors, which is called the "medium oils." The vapors which are still volatile and which escape condensation and separation in this part of the installation are cooled down completely and condensed in the condenser 8. The fraction that is obtained in this manner is known as the "light oils."

It is therefore evident that by making a crude separation of volatile fraction from pitchy residue by distilling the coal tar in a retort and then by the aid of fractional condensation in a series of condensers and coolers, which are arranged in a cascade system, it is possible to secure five separate products from the coal tar. These are, namely, pitchy residue, anthracene oils, heavy oils, medium oils and light oils.

This method of recovering a series of products from coal tar is actually just the opposite of the methods in common use to-day. Instead of raising the temperature of coal tar in the retort by carefully-regulated stages, so as to distill off products of increasing molecular weight and boiling point, the new product removes all the volatile products in a one-stage distillation by carrying the temperature of the operation to the maximum point which is required to effect complete distillation. Fractional condensation is then resorted to separate the different oils. These oils, as they leave the apparatus, contain solid matter dissolved therein. These substances, naphthalene and anthracene, must be removed from the oils before they are in the proper condition for sale. This is accomplished by passing the oils through heated pipes and allowing them to enter cooling vats, where the temperature is lowered to such a point that the solid matters, naphthalene and anthracene, are precipitated out of solution. The clear oils are drawn off and blown or pumped into storage tanks.

Composition and Utilization of By-products Obtained from Coal Tar

As was pointed out at the start of this article, the average-sized gas plant can scarcely be expected to go into the refining of these coal-tar products. There are too many industrial and technical reasons why this would be entirely inadvisable, and it is not recommended that this be attempted except under extraordinary conditions. The gas plant distilling the coal tar it recovers from the gas-making process in accordance with the method described above must find a market for the five products that it produces from the tar. The peculiar properties of these products and the commercial uses to which they might be put are indicated in the following:

Anthracene Oils

The anthracene oil fraction, obtained in the Ab-der-Halden process, has a muddy appearance in the crude condition. After it has been subjected to a prolonged decantation process whereby the solid matters contained in the oil are removed a clear oil is recovered, which has a density of 1.090 to 1.100. The clear oil floats above a very thick deposit of anthracene mud. The oily products find many applications in industrial fields. It may be used to good advantage as a fuel and as an antiseptic in the preservation of wood.

The anthracene mud is filtered, after the clear oil has been drawn off. It yields still more clear oil and crude anthracene which can be mixed with the pitchy residues from the distillation retort and used for various purposes, such as road work, as a fuel, etc.

Heavy Oils

The condition of the heavy oils varies in accordance with the nature of the coal tar that is distilled. It is important to mention here that tars of different properties are obtained by the degasification of different kinds of coal, and that the products that are subsequently distilled from the coal tar will vary likewise. In the case of certain tars, the heavy oil fraction will be liquid in the cold, while in other cases it is mixed with small proportions of anthracene oils. In the latter case it is necessary to remove these anthracene oils by decantation and add them to the anthracene fraction. The clear oil has a density of 1.045 to 1.060. It may be used to good advantage as an internal combustion engine fuel, particularly in the operation of Diesel engines.

Medium Oils

The medium-oil fraction contains almost all the naphthalene that is contained in the original gas tar. This amounts to about 50 per cent by weight of the crude coal tar. Consequently it is essential to chill the oil down to a temperature as low as possible, so as to effect the crystallization of the naphthalene. A clear oil, which has the density of 1.010, is drawn off. This contains about 20 per cent of phenolic bodies and constitutes an excellent absorption oil for the removal of benzol, toluol, etc., from illuminating gas. The naphthalene is then dried by exposure to the air. The finished product is a white crystalline powder. It is also possible to simplify the distillation and fractionation process by combining the medium oil and light oil fractions in one. The mixture that is obtained in this manner is exactly similar in all its properties to the creosote oil that is used in the treatment of railroad ties and in the preservation of wood in general.

Light Oils

The light oils that are recovered in this process of entrainment in a current of steam do not have any properties in common with the light oils that are obtained by the direct distillation of coal tar. In fact, they are entirely different substances. These light oils may be subjected to a distillation process in an apparatus, which is provided with a reflux condenser, which acts as a dephlegmator. The rectification that they receive in this apparatus yields a product which corresponds sensibly to non-washed crude benzol. In this condition the product can be used to good advantage directly in the manufacture of varnishes and even as a fuel in the operation of internal combustion engines.

Conclusions

The author has desired to show in this article the feasibility of gas plants distilling their own coal tar. It has been pointed out that the application of tar distillation in a gas plant is just as feasible as the distillation of ammonia liquor. Experience which has been gained with the process and the apparatus described above has indicated that any gas plant which produces a minimum of 500 tons of tar annually can distill its tar profitably. The Ab-der-Halden process is now being used in gas plants producing 100, 1,000 and 4,000 tons of coal tar annually.

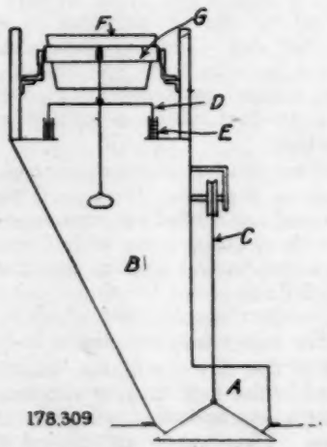
Developments in Gas Technology

Important Information Gathered from All Parts of the World

By ISMAR GINSBERG, B.Sc., Chem. Eng., Associate Editor

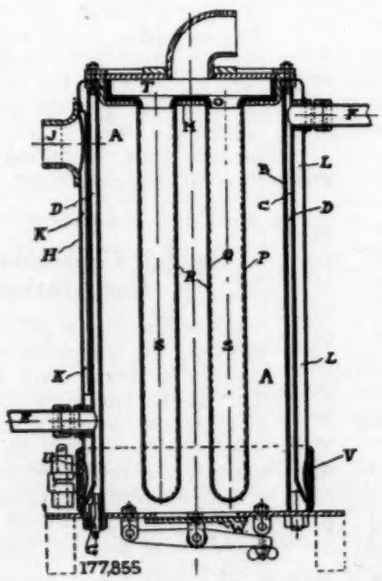
Charging Device for Retorts

The charging apparatus which is described in British Patent No. 178,309, assigned to the Firs, Clarkston, Renfrew, and Maclaurin Carbonisation, Ltd., is constructed with the object of maintaining a producer or retort completely gastight without depending on the tightness of the usual operating bell. In the diagram, A is a small chamber which is arranged immediately over the bell and which communicates with a larger chamber B above and to one side of it. This chamber is provided with an inclined side to direct the material into the chamber A. The bell is suspended by a wire rope C which passes over a pulley and which is counterweighted. The large chamber is provided with a cover D dipping into a water seal E. The cover D, together with the charging funnel F, is carried on a small carriage G so that the cover D may be raised and removed from the opening and the funnel brought over the opening in a single operation.



Gas Cooling and Purifying Apparatus

This apparatus is intended for the purification of gas which is produced by the incomplete combustion of carbonaceous fuel in a suction or pressure producer. The apparatus, as shown in the accompanying cut, comprises two concentric cylinders, B and C, which enclose an annular chamber D. The latter is closed at both ends and is provided with inlet pipes E, F for the circulation of cooling water. An outer concentric casing H is provided with an inlet pipe J for the admission of the gas to be treated, so that the gas passes downward around the annular ring of cooling water. Partitions are provided so as to direct the gas first downward and then upward through the chamber L, and finally over the top of D into the inner chamber A. This chamber is closed at the top with a plate from which a number of tubes P are suspended These tubes are formed of



wire netting covered with a filtering cloth and filled with absorbent material, such as wood, wool, sawdust or sphargum moss. The gas passes through the material to a chamber T, and thence to the outlet. When gases obtained from bituminous fuel are treated, the tarry vapor is removed by means of a coating of similar tar on the filtering cloth. The whole of the purifying elements may be withdrawn for cleaning or removal of the cover of the apparatus, and outlets W, U are provided at the bottom of the spaces L, A for the removal of the deposits. The apparatus, which is patented in British Patent No. 177,855, possesses a large cooling and purifying area in proportion to the size, and there is no effluent liquor to be disposed of.

Sulphate of Ammonia

The usual process of making sulphate of ammonia is to run the sulphate paste from the saturator on to a draining table. After as much liquor as possible has drained off, the crystals are further treated in a centrifugal apparatus to remove a further quantity of liquor. It has been found that crystallization and caking take place on the draining table, thus producing hard lumps in the sulphate and contamination by impurities and acid from the mother liquor. In the process patented in British Patent No. 178,046 these disadvantages are avoided by completing the draining operation without any substantial cooling. This is done by running the sulphate paste from the saturator into an acid-resisting container placed in a steam-heated outer vessel. An ordinary steam-heated boiling pan of the tilting type, which is fitted with a perforated false bottom, may also be used for this purpose, or the ordinary draining table may be fitted with a steam jacket or coils. A sample of the sulphate of ammonia treated in a steam-heated pan for one hour contained 7.07 per cent moisture, 0.31 per cent free acid, 0.02 per cent insoluble matter and 0.04 per cent iron oxide.

Distillation of Coal

The processes involved in the distillation of coal are studied and described in an article appearing in the *Journal Gasbeleuchtung*, volume 62, page 718. Particular attention was given to the decomposition of benzol and toluol vapors in admixture with hydrogen or nitrogen while passing through an incandescent mass of coke. The decomposition of the benzol was observed to commence at 550 deg. Cent. and yielded diphenyl and diphenyl benzene, as well as hydrogen. The reaction is of the reversible type. Under the proper conditions it is possible to obtain stilbene, naphthalene, anthracene, benzol and methane, as well as an oily liquid containing unsaturated compounds from toluol. In this case as well the decomposition began at 550 deg. Cent. and is about complete at 750 deg. Cent.

Gas from Shale

About 100 kilograms of bituminous shale, containing 20 per cent bitumen and having a heat value of 1,400 to 1,450 calories per kilogram, yields 12 cubic meters of gas of 4,000 calories heat value when distilled in a vertical retort. About 2 kilograms of tar is obtained as well. The gas yield can be increased to 15 cubic meters when the oil formed in the degasification is decomposed in a tube filled with incandescent coke. The shale gas had the following composition: Heavy hydrocarbons, 9 per cent; hydrogen, 39 to 40 per cent; methane, 7 to 8 per cent; carbon monoxide, 7 to 8 per cent; carbon dioxide, 14 to 15 per cent; oxygen, 0.3 to 0.5 per cent; nitrogen and sulphureted hydrogen, 15 to 20 per cent. Detailed calculations are given in the original article in the *Journal Gas Beleuchtung*, volume 62, pages 774 to 776.

Cities Service to Spend Millions

The Cities Service Company has announced its approval of plans involving the expenditure of several millions of dollars on the properties of the Ohio Public Service Company, a subsidiary serving the northeastern section of Ohio.

The plans approved call for the construction of a sixty-mile 130,000-volt steel tower transmission line from Lorain to Mansfield, Ohio, a similar line fifty-five miles long between Warren, Alliance and Canton, where it will tie in with the system of the American Gas & Electric Company, which now operates a large power plant on the Ohio River. In addition, the plans call for the installation of a 20,000-kw. turbine at the Edgewater plant at Lorain, Ohio, and a new 30,000-kw. turbine in the Toledo Edison Company plant in Toledo.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity	July 6, 1922 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	106	106¼
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	96	96½
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	95½	96½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	108	108¾
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	88	90
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb. 1, 1925	119	120
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	80	81
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	90	92
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	99¾	100¼
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	98½	99½
Hudson County Gas Co.	First 5s	Nov. 1, 1949	87	—
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	91½	92
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	100	101
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	88	90
Milwaukee Gas Light Co.	First 4s	May 1, 1927	92½	93½
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	90	91
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	105½	107
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	95	96¼
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	89½	90
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	95	96
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	89	90½
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	81½	83
Southern California Gas Co.	First 6s	Nov. 1, 1960	96	99
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	39½	—
Washington Gas Light Co.	General 5s	Nov. 1, 1960	94	94¼
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	89½	—

Loss on 80-Cent Gas Put at $71,683,395

New York, N. Y.—The gas companies whose rate cases were settled by the United States Supreme Court's decision holding the 80-cent gas law unconstitutional had a total net deficiency in earnings of $71,683,395 during the period from Jan. 1, 1917, to the dates of the court's decrees, according to figures made public recently by the Consolidated Gas Company. These figures include the impounded moneys released by the court, but do not include the figures of the Kings County Lighting Company, whose receipts above the 80-cent rate were not impounded.

The deficiency in earnings below the cost of gas, including a fair return on investment, totaled $104,963,252 at the 80-cent rate, according to the statement. The impound collections released to the companies totaled $33,279,857.

"The excess of the deficiency in earnings that accrued subsequently to Jan. 1, 1920, of each of the companies over the moneys impounded," said the stateement, "was as follows:

Consolidated Gas Co.	$12,688,093.83
New Amsterdam Gas Co. (including E. R. Gas Co.)	3,929,093.10
Cent. Union Gas Co.	2,240,869.79
North. Union Gas Co.	1,498,123.34
Stand. Gas Light Co.	3,274,219.96
N. Y. Mutual Gas Light Company	2,711,084.38
Brooklyn Union Gas Company	7,803,962.03
Total	$34,145,449.43

"The present price of gas, which is substantially lower than that charged a year ago by such companies as had obtained decrees in the district court, is from 50 to 56 per cent higher than the pre-war price of 80 cents per thousand. It is somewhat less than the actual present cost, including a fair return on the investment."

Sinclair Consolidated Oil Corporation

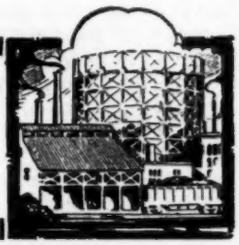
Gross earnings in 1921 were $122,529,183, as compared with $166,648,931 in 1920. Net income was $10,783,313, and after deducting $5,633,756 interest and taxes and $12,038,335 depreciation and depletion there was a deficit of $6,886,778 as compared with a final net of $18,558,580 in 1920. Total assets and liabilities at close of the year were $342,423,553.

Laying Pipe Line

The Midwest-Wyoming Gas Company is making progress on the first unit of its new pipe line system connecting Golden Eagle and Buffalo Basin domes with Greybull. The crossing at the Big Horn River, consisting of two 10-in. pipes, has been laid, and the 14-in. pipe across the Greybull River is being put in place. The first unit, eighteen miles long, will parallel the Hidden Dome line down Nowood Creek.

The second unit of the Midwest Refining Company gasoline plant in Salt Creek has been completed and is ready for operation. Combined capacity is around 20,000,000 cu. ft. per day, making it one of the largest plants of the kind in the country. Laying of a 4-in. welded gasoline line between the plant and Casper is being pushed.

NEWS OF THE GAS INDUSTRY



Senate of Louisiana Passes Committee Substitute for Browne Bill

On June 17 the JOURNAL published in detail an account of the heated controversy held in the chambers of the Louisiana Legislature for and against the desirability of allowing the carbon-black plants use of Louisiana natural gas for the manufacture of carbon black. A later issue of this publication announced that the Louisiana Senate seemed in favor of modifying the original Browne bill and predicted that a modification would be ultimately adopted.

This prediction has now been fulfilled. Passage by the Senate by an unanimous vote on June 20 of the conservation committee's substitute for the Browne bill defined beyond the question of a doubt the State's future policy toward the conservation of natural gas in relation to the carbon-black industry. The committee substitute bill indorsed by the Senate is in the nature of a compromise acceptable to all interests concerned.

Our publication of the previous articles has excited so much comment among our readers that, now the question has been definitely settled and Louisiana has placed herself on record in regard to the situation, we feel that it would not be a waste of space to publish the indorsed bill verbatim. This bill will play a large part in Louisiana's gas history, and for that reason we feel certain that a great number of our readers are deeply concerned in its passage—if not directly, at least indirectly in so far as the effect it may have upon other gas-producing States.

The primary object of the bill is to protect any pipe line that may be built from the gas fields in Louisiana for the distribution of gas to the centers of population. That is to say, if a pipe line is built from the Monroe gas fields to New Orleans the conservation department is invested with the authority to curtail the amount of gas used by the carbon-black factories and to reserve the supply for the pipe line. The text of the bill passed by the Senate in lieu of the original Browne bill, which would have had the effect of ultimately killing the carbon-black industry, is as follows:

"Section 1—Be it enacted by the Legislature of Louisiana that natural gas may be used in the manufacture of carbon black under the conditions as fixed and imposed by the provisions of this act.

"Section 2—That the Commissioner of Conservation is authorized, directed and empowered to fix and determine on the first day of October, 1922, and semi-annually thereafter, what percentage of consumption of natural gas produced by each gas well may be used in the manufacture of carbon black, said percentage of consumption to be used upon the potential capacity of such gas well and which percentage shall not be less than 15 per cent and not more than 20 per cent of the potential capacity of such well, provided that in fixing such basis of consumption the same rule, as far as possible, shall be applied to all gas wells in any producing gas area, and provided, further, that the percentage of consumption may be increased in any particular well when the safety of such well may demand such increase.

"Section 3—That the Commissioner of Conservation is authorized, empowered, directed and required to reduce the consumption of natural gas used in the manufacture of carbon black below the minimum fixed in Section 2 of this act, after promulgation for sixty days of an order to that effect, whenever it is actually necessary to do so in obtaining an adequate supply of natural gas for domestic heating and lighting purposes in the State of Louisiana, and for manufacturing plants, industries and enterprises located and operating within the State of Louisiana, other than those engaged in the manufacture of carbon black; provided that the conditions set out in this section shall not become effective until such time as the establishment of factories, industrial plants and enterprises, the construction of pipe lines in the State of Louisiana and domestic consumers in Louisiana or any one of such shall provide a demand which necessitates the enforcement of the same.

"Section 4—That no person, partnership, firm, corporation or association of persons shall be permitted to use natural gas in the manufacture of carbon black without extracting and saving therefrom the gasoline contained, provided the amount of gasoline therein contained shall not be less than 150 gallons to the million cubic feet of gas, such content to be based on the amount of gasoline actually recoverable by modern extraction plants as generally operated; and provided, further, that the Commissioner of Conservation may suspend the operation of this section in case of emergency.

"Section 5—That the Commissioner of Conservation is authorized, empowered and directed to make, adopt and promulgate orders, rules and regulations which in his judgment may be necessary for the proper carrying out of the provisions of this act.

"Section 6—That it shall be the duty of the Commissioner of Conservation to enforce the provisions of this act and the orders, rules and regulations made, adopted and promulgated by him.

"Section 7—It shall be the duty of the Department of Justice to represent said commissioner in the enforcement of the provisions of this act, and of the orders, rules and regulations made, adopted and promulgated by said Commissioner of Conservation.

"Section 8—That any person, partnership, firm, corporation or association of persons violating any provisions of this act, or any rule, regulation or order of the Commissioner of Conservation prescribed by authority of this act shall be guilty of a misdemeanor and on conviction shall be punished by a fine of not less

than $100 nor more than $500, in the discretion of the court, and each and every day in which any person, partnership, firm, corporation or association of persons shall violate any of the provisions of this act, or any such rule, regulation or order of the Commissioner of Conservation, shall constitute a separate offense hereunder and subject the offender to the penalty herein provided: and three convictions for violating any of the provisions of this act, or such rule, regulation or order of the Commissioner of Conservation, shall subject the offender to forfeiture of the right to manufacture natural gas into carbon black at the suit of the Commissioner of Conservation before a court having jurisdiction at the place where such defenses are committed, and the court may, in its discretion, decree such a forfeiture."

Gas Companies Help Save Gas for Customers

Dallas, Texas.—One of the constant efforts of the gas companies of Texas is to assist the customers in getting the best results from the use of gas. "The relations of the customers of any utility with the utility are so intimate and interdependent," said H. C. Morris, general manager of the Dallas Gas Company, "that whatever helps either helps both and whatever hurts one hurts both. If we can aid the customer in economical use of gas we lower the cost of service to him and extend the usefulness of the plant.

"We are trying to get every customer advised fully as to the use of gas so that he will know that he is getting maximum returns from what he buys.

"While to the average customer a gas meter is more or less of a mystery as a matter of fact it is as simple and accurate as a standard quart measure. It actually measures the volume of gas by taking it in and pouring it out. The motive power that runs it is the gas that passes through to the consumer's piping and burners. If the burner cocks are all closed the gas meter is motionless unless there is a leak in the consumer's pipes or appliances. The consumer should occasionally close all burners and watch the meter dial. If the two-feet test hand moves the consumer's pipes or appliances are leaking.

"If the consumer desires to know the quantity of gas any particular appliance consumes he can find out by cutting off all other appliances and allowing the particular appliance to burn while he watches the meter register the quantity of gas consumed in a given time."

Court Impounds Five-Cent Increase

The raise of 5 cents on natural gas furnished Kansas City customers will go into effect July 12. The Kansas Natural Gas Company secured an order from the court to the effect that it should demand from the customers the additional 5 cents and place the same in trust with the clerk of the court until it can be determined whether the Kansas Natural Gas Company has a right to make the demand for the increase. This question will be tried out in the courts. The court, with Judge Van Valkenburgh on the bench, decided that the Public Service Commission had no authority to act in the matter, as the Kansas company was an interstate concern. The order was made so as to protect the rights of all parties.

The Kansas City Gas Company, in making the announcement of the increase to 85 cents, states that a recent accounting showed that it was making only about 6 per cent on its investment and that the advance of the rate for gas furnished it by the Kansas Natural Gas Company made it necessary for it to pass the increase on to the consumer. It promises, however, that if the case is decided in its favor the money collected will be returned. The impounding of the money collected makes this promise secure.

The order of the court would have allowed the company to put the rate into effect on June 27, but because this would have made it necessary to make an extra reading of the meters the company chose to wait until the 12th of July, after another general reading was made.

In the controversy between the Natural Gas Company and the Kansas City Gas Company there has been an order made by the court restraining the Kansas Natural Gas Company from shutting off the gas from the pipes of the Kansas City company, even though it did not pay the increased 5 cents demanded by the Kansas Natural Gas Company. As the money covering the proposed increase is now being collected from the consumers and impounded with the clerk of the court, it would seem that the Kansas Natural Gas Company was fairly sure of its money should the final decision be in its favor.

The controversy was intensified this week, however, when the Kansas City company presented a check to the Kansas Natural in payment for gas for a term from April 25 to May 25 and amounting to $142,305.45. This was indorsed as "Tendered in full payment." As this does not take into account the raise in the rate of 5 cents, the Kansas Natural refused to accept the same and applied to the court to have the temporary restraining order withdrawn.

General Oil News

Samuel Burk Burnett, Texas pioneer cattleman, one of the largest ranch owners, a man owning millions of dollars' worth of land, honored by having the wonderful Burkburnett oil fields named after him, died in his Fort Worth, Texas, home June 20.

The floods in Texas are no doubt playing havoc with oil wells in some sections. In the vicinity of Brownsville the water is all over the town of Lyford, cotton ready to pick under water, and when this was written there was no abatement discernible, but, of course, the end of the overflow was not far off.

Late estimates from Salt Creek field are: With 127 wells drilling, all expected to be producing by September, the usual average yield of 400 bbl., there should be added to the present yield some 50,000 bbl. The total capacity of all wells in the field operating at 100 per cent is between 120,000 and 130,000 bbl. daily. The Midwest Refining Company has already placed an order for 1,000,000 bbl. storage.

Now there has been organized the townsite of Teapot, a little city to grow up on the land surrounding the Mammoth Oil Company's holdings, where diligent drilling is taking place at Teapot Dome. Soon there will be a "tempest in a teapot," eh?

Now the well brought in at section 14-15-29 by the Mutual Oil Company, at Cat Creek, Mont., listed as 1,000 bbl. daily, was deepened, and she is now delivering 3,000 bbl. and experts say that she will make good for 4,000 shortly.

New Orleans Spends $10,000 on Main Maintenance

When the ultimate consumer raises a lusty row about the price he is being charged for gas by his local public utilities company, he rarely considers the many divergent channels into which the capital of the company unavoidably drains to insure the uninterrupted service which the gas people must give him. The term "operating expense" is so far-reaching that the consumer is quite unable to visualize the actual expense to which the company is put so that he might have the convenience of its service constantly at his disposal.

It is our contention that if the consumer is sufficiently educated along the proper lines and shown conclusively that his rate per cubic foot is not all profit—as some of them really believe—his periodic howl about high rates will be heard less often and in a more subdued tone. Along with the policy of gas companies throughout the country to "educate the public" in the ways and means to which its money is put, the New Orleans Railway & Light Company has recently published a number of stories in local papers to convince its consumers that the path of utilities officials is not strewn with roses and that the consumer in New Orleans is not a victim of unfair charges.

One of these articles gave the comparative gas rates in Southern and Southwestern cities. The showing that New Orleans received was anything but unsatisfactory. Another article, which follows, was recently published in a local paper.

"It costs the New Orleans Gas Light Company $10,261.47 a year to take the 'sweat' off gas after it is in the mains and on the way to the consumer. 'Sweat' is the moisture that condenses at the lower temperature of the underground pipes.

"Gas, as it leaves the generating apparatus, contains water vapors and condensable hydrocarbon vapors, which are deposited in the form of liquids as the gas cools down during the process of condensation. Even though all the hydrocarbon vapors have been removed in the process, the contact with water in the water seals, throughout the process, and with the water in the container tanks, causes the gas to be pretty fully saturated with water vapor at the temperature it then possesses. Vapor is a substance in gaseous form near the point of saturation—that is, near the point at which any further increase of pressure or decrease of temperature will cause a portion of the substance to condense into the liquid or solid state—while what is called a true gas is a substance in gaseous form far removed from the point of saturation, and therefore capable of being compressed and cooled without the occurrence of condensation.

"The temperature during the passage of gas through the mains is further lowered and the gas 'sweats.' Water vapor contained in it is condensed. The mains are built on a slight pitch, with 'drip pots' at frequent intervals. Into them the water flows and is continually pumped out; otherwise, the pipes would be clogged up.

"Seven men are employed by the New Orleans Gas Light Company to pump out this water. They do nothing but go around the city with hand pumps and clean off the gas sweat. Renewal and replacement of syphon pipes and drip pots cost $600 in 1921; superintendence to see that the work was done right cost $400 more. The cost of the labor and the attendent charges for cleaning off the sweat was $9,261.47; total, $10,261.47."

Such an article gives the general public a better understanding of what "operating expense" means to the gas company. It places the mind of the consumer in a more satisfied state that his interests as far as the gas question is concerned are of as much concern to the company supplying him with the service as they are to himself. It permits him to see that such expense rather than being unnecessary is uncontrovertibly necessary. It has a tendency to make him feel that the money he is paying out every month is being used to insure his further comfort and uninterrupted peace of mind.

The newspapers are always willing—even eager—the publish articles of this nature. They know that nine out of every ten of their subscribers believe they could run the utilities company better and at a lower cost than the present management and for that reason devour any piece of news pertinent to the lighting or traction question. All that is left for the traction company to do is to convince these nine out of ten subscribers that they are incapable of such a feat. And that should be a simple matter.

Form New Company

United Oil & Refining Company has been organized in Montana with an authorized capital of 500,000 shares of preferred and 1,000,000 shares of common stock to engage in the producing, refining and marketing business. It has taken over the Virgelle Oil Company formed by the same people a few months ago with 6,640 acres of the Virgelle Dome, near center of Choteau County, Mont.; 5,500 acres in Benton district, and 5,000 acres in Blaine County. The company proposes to drill on Virgelle Dome at once and to establish filling stations in Montana and Idaho. Great Falls people are behind the company, including C. F. Denny, Charles G. Carrico, John V. Carroll and Dr. R. E. L. Goddard.

Oil Shipments and Valuation

Using the latest obtainable figures we find that the exports of crude and refined oils in May aggregated 203,674,487 gal., valued at $26,804,198 against 153,374,329 gal. valued at $24,539,476 in May, 1921.

Gasoline.—Exports in May, 55,823,839 gal., being about 15,300,000 greater than May, 1921. The May exports of gasoline valued at $12,458,556 represents close to 65 per cent of the total value of oil exports for the month.

Kerosene.—The export sof kerosene, 60,505,977 gal., were 29,000,000 below April and the smallest monthly amount so far this year, but it is believed that the "storing season" has begun. Withal, the May, 1922, amount was 8,500,000 gal. above May, 1921.

Lubricating oils summated practically 25,000,000 gal., a decline of 6,000,000 from April, but about 9,000,000 above May, 1921.

Gas in Utah Test

A test drilled jointly by the Ute Petroleum and Utah Southern Oil companies near Duchesne, Utah, ran into a fissure at 1,500 ft. from which there was a heavy flow of gas through 800 ft. of water. The pressure threw the water out of the hole and a small amount of oil and gas is still coming from the hole. With water head remover, it is estimated it would continue to make around 2,000,000 cu. ft. of gas per day.

Pennsylvania Gas Association Activities

The first council meeting of the Pennsylvania Gas Association was held May 26 in Philadelphia, and after the regular order of business the following important subjects were discussed:

An educational program, as outlined by S. S. Wier upon the occasion of the annual meeting of the Pennsylvania and New Jersey gas associations, was proposed by J. B. Klumpp for the consideration of the council. Consequently Mr. Klumpp was appointed chairman, to be assisted by Messrs. Dutton and Bartlett, and an amount not exceeding $1,000 was appropriated to carry on this work of the committee.

Grier Hirsh invited the Pennsylvania Gas Association to hold its mid-year meeting in York for one day during the first week of December, and it was unanimously decided to accept the invitation.

After the regular meeting, council of the Pennsylvania Gas Association and the board of direction of the New Jersey Gas Association convened at the University Club and the following gentlemen were proposed and accepted by both associations as delegates to select for consideration the officers and directors of the Eastern States Gas Conference: Griffin Gribbel, Philadelphia, temporary chairman; S. J. Franklin, Millville, N. J.; C. H. Geist, Atlantic City, N. J.; C. W. Hoy, Glassboro, N. J.; H. H. Newman, Trenton, N. J.; Stanley Grady, Philadelphia; O. F. Potter, Newark, N. J.; M. C. Fox, Philadelphia; E. L. Smith, Towanda, Pa.; C. W. Wardell, Gloucester, N. J.; W. R. Rhodes, Hagerstown, Md.; J. H. Keppleman, Reading, Pa.; L. S. Williams, Harrisburg, Pa.; J. B. Myers, Philadelphia; J. W. Crankshaw, Allentown, Pa.; Grier Hirsh, York, Pa.; J. M. Scott, Wilmington, Del.; R. F. Bonsall, Baltimore, Md.

The committees for 1922-1923 are as follows:

Papers and Program—H. H. Ganser, chairman; W. G. Gribbel, G. B. Bains 3d.

B.t.u. and Rates—J. H. Keppleman, chairman; E. L. Smith, R. B. Hull.

Public Relations—J. H. Keppleman, chairman; E. L. Smith, L. R. Dutton, H. H. Ganser, L. S. Williams, R. B. Hull, W. R. Rhodes, E. E. Bair, J. J. McKnight, P. A. Frick, F. P. Duggan.

Educational—J. B. Klumpp, chairman; L. R. Dutton, C. E. Bartlett.

A. G. A. Committees to Sept. 30, 1922—Technical, R. C. Cornish; commercial, J. W. Crankshaw; manufacturing, C. E. Bartlett; accounting, Edw. Porter; advertising, R. J. Rolston.

Finance—L. R. Dutton, chairman; T. W. McDonald, C. E. Bartlett.

State, County and Township Highway—L. R. Dutton, chairman; L. S. Williams, F. P. Duggan.

Membership—J. A. Weiser, chairman; M. N. Bailey, J. S. Fees, R. P. Crawford, H. N. Christmas, C. E. Bartlett, G. L. Cullen.

Entertainment—C. E. Bartlett, chairman; Stanley Grady.

Mid-year Meeting—Grier Hirsh, chairman; T. W. McDonald, L. S. Williams.

Publication—L. R. Dutton, chairman.

Time and Place—G. B. Bains 3d, chairman; J. W. Crankshaw.

Monroe Natural Gas Output Nears Billion Cubic Feet Daily

Captain R. P. Webb, Monroe superintendent of the Louisiana Conservation Department, has recently issued a report containing a detailed summary of data relative to the gas field in question, including open flow tests, geological surveys as compiled under the direction of Ben K. Stroud, supervisor of the mineral division, and inspections of all the wells in that area. According to this report, the Monroe gas field has a capacity of 938,665,000 cu. ft. of gas per day. Captain Webb's report states that the present capacity of active wells added to the potential capacity of wells now being drilled will bring the capacity of the field above the billion mark.

There are eight additional wells now in the process of being drilled by companies already in the field, while drilling permits have been issued by the Department of Conservation to seven applicants. Two wells have 6-in. pipe set on gas rock and will be drilled in later. Should the capacity of the field reach the billion mark—and it is considered a very conservative estimate to state that it will—then the Monroe field will have exceeded its greatest record.

The report issued by Captain Webb shows that there are sixty-six producing wells in the Monroe field with an average open-flow capacity of 10,307,000 cu. ft. of gas daily; the twenty-eight wells which have been drilled and capped have a daily open-flow capacity of 11,075,000 cu. ft. The total is ninety-four producing wells with an open-flow capacity of 938,665,000 cu. ft. of gas per day.

Of the four crater wells in existence, three have been bridged and checked. The fourth, however, is still wild, and consequently is wasting an enormous amount of gas. Although steps have been taken to check this wild well and check the wastage, such efforts have been rewarded with only meager success.

A fact worthy of attention is that a number of wells show a marked reduction in rock pressure. Captain Webb is rather optimistic of this condition in his report, and leads one to believe that the actual reduction is not so pronounced as the recent Stroud survey might suggest. This he attributes to the fact that a reliable estimate of the reduction cannot be made in view of the deplorable inaccuracy of tests when the field was first discovered. That such optimism is not entirely well founded is borne out in that for fifty-six producing wells the average rock pressure is 869 pounds, while that for fifteen wells which are capped is 920 pounds.

The report further states that operations in the field show only one dry hole has resulted from drilling in the proven area. Moreover, only three wells have been abandoned—and then temporarily—for various and sundry reasons. Pipe lines and connections from the field to markets in the immediate vicinity of the field are reported to be in excellent condition and operating in line with the highest of expectations.

The report occupied about three months in the making. It originated in a survey of the field by Ben K. Stroud, supervisor of the minerals division, and Frank T. Payne, engineer of the Department of Conservation. Altogether it gives a most comprehensive idea of the activities of the operators in the field and the remarkable progress made since the first well was brought in. Conditions on the whole in the entire area are said to be good. In spite of the fact that several bad wells exist, steps are being made to correct the defects as soon as possible, and it is judged that this hope will be realized within a very short time.

Gas Company Man Tells About Service

A representative of the Harrisburg Gas Company has cited a series of benefits which he says are derived from the convenience of real gas service.

"It is this first-class service that we are endeavoring to furnish twenty-four hours every day and we believe we are succeeding," he said.

"That kind of service means much to the home. It brings—

"Leisure and independence to the American housewife.

"Makes strength and health by eliminating drudgery.

"Makes happy, attractive, contented homes by furnishing cheerful, eye-comforting illumination, quick, intense heat, or steady, dependable warmth.

"Does away with disease-laden smoke, grime, soot, ashes and fumes.

"Saves linens, draperies, rugs, upholstery, wall paper, furniture and clothes.

"Helps us all to have a pleasanter place in which to live and enjoy the good health that goes with a pure, wholesome atmosphere. A service as intimate as this must needs be friendly. Let us deal with it in a friendly way."

Transmission Losses of Natural Gas

As a part of the efforts of the Bureau of Mines to conserve the supply of natural gas, arrangements have been made with different gas companies for obtaining data on losses of gas by transmission. An outline of a new manual relating to the use of natural gas in the home has been prepared. The manual will discuss in a popular way the difficulties encountered in the production and transmission of natural gas, the diminishing supply and the necessity for conservation. This work, which is being done by R. A. Cattell, natural gas engineer, is in co-operation with the Natural Gas Association of America.

Explosion Injures Oil Men

A recent explosion of a gasoline drum being used as a stove in burning natural gas for heating purposes at the well of the California Oil Company, of Wyoming, on Pine Mountain Dome, thirty miles west of Casper, resulted in the injury of W. D. Evans, president of the Evans Oil Corporation; W. R. Kaemmerling, of the California Oil Company, and W. P. McGravey. The drilling rig was also partially wrecked. Evans and Kaemmerling had gone to the well on hearing reports that oil had been encountered.

Gasmen Conducting Tests to Combat the High Prices of Coal

Beloit, Wis. — Experiments of great importance to gas users over all the nation are being conducted at the plant of the Beloit Water, Gas & Electric Company, under the auspices of the American Gas Association, and in co-operation with scientists from United States Bureau of Mines.

The tests are being made to perfect processes by which the cost of manufacturing gas may be reduced through utilization of the cheaper fuels of Illinois in place of high-priced coke or anthracite.

"With coal and oil prices mounting continuously, increasing costs of producing gas, managers of gas companies are constantly trying to improve the efficiency of their plants so as to enable them to keep the charges for gas services as low as possible and to help keep down the living costs of the great masses of people," said B. F. Lyons, vice-president and general manager of the Beloit company.

"Gasmen are working all the time to use means to conserve the nation's rapidly depleting natural resources, make use of cheaper grades of fuels and oil because of their inability to obtain the better grades heretofore used and keep capital expenditures down by endeavoring to increase the capacity of their existing plants.

"All gas companies are looking for new places for increased economies because raw materials, labor and the cost of borrowing money have gone up so tremendously in the last few years, whereas rates to the people have remained low.

"The experiments thus far have been quite successful and point the way for some economies, but further work will be necessary to determine definitely the best method of procedure."

Similar tests will be carried out at Streator, Ill., and Davenport, Iowa. A report on the progress of the work will be made at the convention of the American Gas Association in October.

Public Service Has Company Magazine

The Public Service Corporation of New Jersey has started publication of *Public Service News* for the employees and officers of that company. The first issue, dated July 1, in addition to giving the news of the various activities of the company, contains a letter of greeting from Thomas N. McCarter, president.

This new publication, one of the most interesting that has been issued by any company, is in metropolitan newspaper style, with the news handled in lively fashion. It is also well illustrated.

Harlow C. Clark is editor, with the following editorial counsel:

Jacob T. Barron, John A. Clark, Jr., John L. Conover, Henry C. Donecker, William B. Feller, Joseph T. Foster, James P. Hanlon, William H. Hartshorne, Henry H. Holding, Franklyn H. Heydecke, Jean P. Leinroth, Frederick A. Neis, Frank D. Pembleton, Allis J. Van Brunt, William K. Vanderpoel.

Asks Franchise Extension

Marshall, Mo.—The Missouri Gas & Electric Service Company, of Marshall, whose franchise with the city expires in August, has made application to the city council for a renewal of the franchise for a period of twenty years. The application must be voted on by the people.

Colorado Incorporations

The Western Slope Shale Oil & Products Company was incorporated for $1,000,000 on June 26. While the business of the company will be principally combined to Garfield, Mesa and Rio Blanca counties, the general office will be in Denver. The incorporators are Charles W. Clogston, Crawford McLaughlin and C. A. Tygart.

Plan Merger of Two Gas Companies

Topeka, Kan.—Plans for a new $12,000,000 corporation were outlined recently in an application filed with Attorney-General Hopkins for a charter for the Empire Natural Gas Company, a proposed merger of Empire interests in Kansas. The Kansas Natural Gas Company and the Empire Gas & Fuel Company, holding millions of dollars' worth of properties in the State, now are operating independently.

Shreveport Removes Service Charge

The Southwestern Gas & Electric Company, of Shreveport, La., has agreed to an arrangement which removes the service charge from gas bills for domestic purposes and generally reduces industrial rates. The settlement was offered by Huey P. Long, chairman of the Louisiana Public Service Commission several weeks ago but it was not until recently that the Southwestern Gas & Electric Company agreed to accept and act upon Commissioner Long's plan of rates.

The Louisiana Public Service Commission, in trying to make an agreeable settlement in the gas controversy between the gas company and the people, had to fight two battles. One of the battles was against the commission council of the city of Shreveport, who claimed the right to fix the rates irrespective of the existence of the Public Service Commission. If the commission council had won the issue, then the franchise rate of 50 cents per thousand cubic feet would have immediately gone into effect.

This would have been disastrous from every angle, including the gas company's, for in discussing the compromise rate A. G. Curtis, vice-president of the Southwestern Gas & Electric Company, said:

"We felt that the industrial rate originally proposed was too high and that, had we accepted it, we would have lost a great part of our industrial trade. The rate, stated in the compromise, will we believe be acceptable to industries consuming fuel in large amounts."

The power of the Louisiana Public Service Commission over the Shreveport Commission Council, in such matters, was sustained, however, by the Supreme Court and the enforcement of a 50-cent rate was thereby averted. The elimination of such a danger was decidedly in favor of the gas company, for it has been proved by a practical demonstration extending over a long period of time and under various conditions that industries cannot take advantage of natural gas facilities if the rate per cubic foot is not placed upon a reasonable basis.

The other battle which the Public Service Commission had to fight was a suit instituted against them by the Southwestern Gas & Electric Company, in the United States court. After having settled thi sdifficulty and after having their authority over the Shreveport commission council confirmed, Mr. Long was then able to submit to the gas company what he considered a fair rate—which it finally agreed to accept.

Immediately after the acceptance of the Southwestern Gas & Electric Company, an order was issued in the name of the commission, signed by Mr. Long and forwarded to the other commissioners for signature. The order had the effect of reducing domestic gas rates by the elimination of the 50-cent service charge per month as formerly assessed by the company. Industrial rates also undergo a reduction in the sliding scale provided by the commission by which they are charged 10 cents per thousand cubic feet upward, according to their monthly consumption.

The complete scale of rates follows:

	Per Thousand
50,000 cu. ft. and less	$0.30*
Next 250,000 cu. ft.	0.25*
Next 700,000 cu. ft.	0.20*
Next 2,000,000 cu. ft.	0.12
Next 2,000,000 cu. ft.	0.11
In excess of 5,000,000 cu. ft.	0.10

*Subject to a 5 per cent discount if paid within ten days from date of billing.

Although the settlement was not made until Wednesday, June 21, the reductions were pronounced retroactive to June 1, which will naturally affect the June bills.

Oklahoma Oil Activities

There are so many reports of oil finding in Oklahoma that were we to try and list them all it would require too much space and we would be sure to omit someone and then be accused of unfairness; therefore, we will merely say that from the northernmost part of Montana down to the edge of the Gulf of Mexico there is much activity and new wells being brought in, but it seems that most of the wells brought in are owned by the big fellows.

Gallaher with Southern Illinois Company

William Gallaher, formerly in charge of the industrial fuel department of the Laclede Gas Light Company, St. Louis, Mo., is now in the employ of the Southern Illinois Light & Power Company, East St. Louis, as industrial gas engineer.

Offer $13,500,000 Issue of Detroit City Gas Co.

New York, N. Y.—Halsey, Stuart & Co., Inc., the National City Company, Lehman Brothers and Goldman, Sachs & Co. are offering an issue of $13,500,000 Detroit City Gas Company first mortgage gold bonds, series "A," 6 per cent, at 97½ and accrued interest, to yield more than 6.20 per cent. The bonds mature July 1, 1947.

These bonds will be secured, in the opinion of counsel, by a direct first lien upon all the physical properties, rights and franchises of the company, with the exception of a part formerly owned by a predecessor company amounting to $930,000,000 and maturing in 1928, representing less than 6 per cent of the total value of the property.

According to a letter from the president of the company, for the twelve months ended May 31, 1922, gross earnings amounted to $8,668,075 and net earnings to $1,726,631. The annual interest charges on the outstanding bonded debt, including this issue, will be $856,500. The American Light & Traction Company owns over 99.97 per cent of the common stock of the company.

Wyoming Pipe Line

The Wyoming Pipe Line Company, organized by interests identified with the E. T. Williams Oil Company, is going ahead with plans for its pipe line from Salt Creek either to Casper or Glenrock. Grading is in progress for a 55,000-barrel storage tank, material for which has been moved to the field, and which indicates that the Williams company will soon begin storing crude in anticipation of the construction of the line. Present plans provide for an 8-in. line. Negotiations are pending with a large company which proposes to erect a refinery in Wyoming.

C. J. Wilson Weds

C. J. Wilson, local manager of the Southern Illinois Light & Power Company, Edwardsville, and Miss Ruby Raine, secretary to the manager of that company's East St. Louis, Ill., property, announced their marriage on Saturday, June 23, to their friends and also advised them that after July 8 they would be at home at Wilmington, Del., where Mr. Wilson has accepted a position with the Wilmington Gas Company.